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ABIETENE A NEW HYDROCARBON.

By William Wenzell.

Read before the California Pharm. Soc., Dec. 13th, 1871.

This hydro-carbon is the product of distillation of the terebinthinate exudation of a coniferous tree indigenous to California, and is obtained from the *Pinus sabiniana*, Dougl., a tree inhabiting the dry sides of the foot hills of the Sierra Nevada mountains and the Coast Range, known more familiarly, however, by the name of Nut Pine or Digger Pine, names seemingly suggested by the edible quality of its fruit, upon which the Digger Indians chiefly rely as an article of food.

During winter the tree is notched and guttered at a convenient height from the ground, to receive the resin which then exudes, and when a sufficient quantity is thus obtained, it is carried to the stills for distillation. As this hydro-carbon is extremely volatile, and therefore much loss often sustained if the resinous exudation is kept long, distillation is usually commenced as soon as a sufficient quantity of the "gum" has been collected. The crude oil, as usually found in San Francisco, is a colorless, limpid fluid, and requires only to be distilled to obtain it quite pure. It occurs as an article of commerce, and has acquired, during the last eight or ten years, a considerable reputation under the names of abietene, erasine, aurantine, theoline, &c., for the removal of grease and paint from clothing, fabrics, &c.,—an efficient substitute for petroleum benzine.

In order to determine whether it was homogeneous in its composition, or composed of several hydro-carbons, seventeen fluid-ounces of the crude abietene were distilled fractionally, and the several distil-

lates of three ounces each separately collected. The first three ounces were obtained with the thermometer indicating 101° C., the second fraction indicated a thermometric rise of a quarter of a degree, and the thermometer rose with every succeeding fractional part until the fifth fraction indicated a boiling point of 104° C. With the sixth or last fraction the thermometer rose rapidly from 105° to 115° C., when at this point the distillation was discontinued. The remaining ounce presented a brownish red appearance, and left, on evaporation in a porcelain capsule, a small quantity of a solid resinous body. Each fractional part was found, on examination, to possess a boiling point of 101° C., showing the hydro-carbon abietene is a homogeneous liquid. Pure abietene presents a colorless, limpid liquid, possessing a strong penetrating odor, bearing some resemblance to oil of oranges. It is specifically lighter than water, turpentine, absolute alcohol, and ether, its specific gravity being 0·694 at a temperature of 16·5° C. It is very volatile and highly inflammable, burning with a brilliant white, smokeless flame. It is nearly insoluble in water; soluble in five parts by volume of 95 per cent. alcohol. When poured upon the hands, it evaporates rapidly, communicating the sensation of cold. Dry hydrochloric acid, passed through it for ten hours, did not react upon it. It dissolves iodine with the production of a rich purple color; bromine is also freely dissolved, forming an orange-colored solution. Nitric acid of sp. gr. 1·43 added to abietene occasioned no reaction in the cold, but when the mixture was heated to boiling, a moderate reaction was established with the disengagement of nitrous acid fumes. Concentrated sulphuric acid exerted no reaction whatever, either in the cold or on heating; metallic potassium was not acted upon. On passing dry chlorine into abietene this gas was abundantly absorbed, with the evolution of hydrochloric acid gas, an increase of volume and density, accompanied by a rise of temperature. On saturating abietene with chlorine, assisting towards the end with a gentle heat, a thick liquid resulted, which, when heated on a water-bath to remove some hydrochloric acid held in solution, was found to possess the consistency of glycerin, sp. gr., 1·666, to be colorless, insoluble in water, but soluble in warm alcohol, and possessing a taste resembling balsam of fir.

In comparing abietene with terebene (spirits of turpentine), the hydrocarbon obtained from other species of the pine family, the *Pinus palustris*, *Pinus sylvestris*, etc., some very striking differences are observed in their physical and chemical properties. Particularly noticeable is the

remarkably low sp. grav. of abietene, which is only 0·694 at 16·5° C. that of terebene being 0·840, at about the same temperature; again the boiling point of abietene is 101° C. while oil of turpentine boils at 160° C. Terebene absorbs hydrochloric acid with avidity, forming hydrochlorate, while abietene resists the prolonged action of this gas at ordinary temperatures. Nitric acid acts violently upon terebene, while, on the other hand, with abietene no action was instituted, and it was only by the application of heat that a quiet evolution of nitrous gas was observed. The action of chlorine upon abietene seems to furnish a true substitution product, the hydrogen of the hydro-carbon being largely replaced by chlorine, sufficient to raise the spec. grav. of the liquid from 0·694 to 1·666. When this substitution compound was subjected to distillation, at a temperature of 256–260° C., hydro-chloric acid was given off abundantly, with subsequent blackening and the disengagement of pyrogenous products, leaving, finally, a carbonaceous residue.

Abietene is a powerful solvent for the fixed and volatile oils, with the exception of castor oil, which is absolutely insoluble in abietene; while, on the other hand, castor oil is capable of dissolving nearly two-thirds of its volume of the hydro-carbon.

Abietene dissolves balsam of capaiba freely and in all proportions. Canada balsam is dissolved in all proportions up to two parts of abietene, an excess of the latter precipitating the resinous principle of the balsam entirely as a white flocculent precipitate, the volatile oil being retained in solution. Balsam of Peru requires about one-fifth of its volume of abietene to form a clear solution, but if a quantity greater than this is added a turbid mixture will result, which, on repose, will allow the excess of abietene to rise to the surface. It will be seen at a glance, from these data, that, although abietene possesses the properties of a general solvent for fixed and volatile oils in every proportion, it yet is incapable of dissolving castor oil, balsam of Peru, and Canada balsam, which in their turn exert a solvent action upon abietene.

When abietene is burned in an alcohol lamp, with flame not too large, a brilliant white light is obtained, without smoking. Its vapor is powerfully anæsthetic when inhaled, and it has been used with success as an insecticide against moths, &c., when sprinkled in closed receptacles. Castor oil mixed purposely with other fixed oils, and the mixture then shaken with four times its volume of abietene, the castor oil will be found to separate and collect at the bottom of the mixture,

forming a distinct layer, consisting of one volume of castor oil and two-thirds of a volume of abietene, so that by this means sophistications of castor oil with other fixed oils may be easily detected and quantitatively determined.

BROMIDE OF CALCIUM.

By James R. Mercein.

The good effects experienced by Prof. W. A. Hammond and other well-known physicians, in the substitution of bromide of calcium for bromide of potassium as a sedative and hypnotic, have brought this salt into somewhat prominent notice during the past year. The fact that its wholesale price seemed to be exorbitant in proportion to the cost of the ingredients, first induced me to try and make it for myself. A thorough search in nearly a dozen works on chemistry gave me no clue whatever, only one or two authors giving the name even. In Miller's Chemistry, however, and in Watt's Dictionary of Chemistry, there is a general description, but nothing to serve as a working formula. But after various trials I have succeeded in making the salt to my satisfaction, and herewith give the *modus operandi* for the benefit of others.

Five ounces of bromine and two and a half pints of water were put together in a half gallon specie jar. A stream of sulphuretted hydrogen was then passed slowly into this, care being taken to place the end of the delivery tube so as to touch the surface of the bromine. This was continued until the bromine was all taken up, and the resulting liquid was of a muddy yellow color with a copious deposit of sulphur. It was then filtered, transferred to a capsule and gently warmed, to drive off any trace of S^2O^5, and again filtered. The result was a strong solution of hydrobromic acid, specific gravity 13°. In order to free this from any possible impurity, it was distilled by a sand-bath heat until four-fifths had passed over. It was then saturated with precipitated carbonate of lime, which was added in slight excess, so that even after applying a gentle heat, a slight quantity remained undissolved. This solution of bromide of calcium was filtered, evaporated by a water-bath to a syrupy consistence, then removed from the fire and stirred until it cooled. The result was six ounces of bromide of calcium in fine, granular powder, possessing every characteristic of the salt, and freely soluble in twice its weight

of water, leaving a mere trace of residuum upon the filter. Here comes in the practical part of the operation. This salt, perfectly free from uncombined lime, such as was found in the commercial article, was made for about one-fifth of the market price.

Jersey City, N. J., Feb., 1872.

CHALK MIXTURE.

By Geo. W. Kennedy.

Mistura cretæ of our pharmacopœia is a remedy frequently prescribed by our physicians for diarrhœa and summer complaints of children, and yet it is very objectionable, owing to its becoming sour, especially during the summer season, that being the time when mostly prescribed. It is surprising how rapidly it ferments, the supernatant liquid becoming sour and mouldy; of course there is no necessity to dispense a fermented preparation, when it may be made up fresh every time when wanted, and yet how very inconvenient it is at times to prepare it as called for, especially if several customers are waiting in the store, and most likely all of them having prescriptions to be filled, each one desiring to be waited on first.

In order to see what was sold in some of our shops as chalk mixture, I purchased some from twelve different stores; three of the samples proved to be in perfectly good condition, eight partially sour and one quite sour; two of the first were from stores kept by graduates in pharmacy, the rest were not.

By way of experiment in order to obviate this great inconvenience I tried the substitution of glycerin for sugar, and so far, up to the present time, I have found it to work well after the following formula:

℞.	Cretæ Præpt.	
	Glycerinæ (Bowers')	*aa* ℥ss.
	Pulv. acaciæ	ʒij.
	Olei Cinnamomi	gtt. viij.
	Aquæ Destill.	℥viij.

Mix thoroughly.

The above mixture I have kept a whole summer and up to the present time; I made it about ten months ago, and upon opening it I found it in perfect condition, not even the slightest acidification having taken place.

The above process is not used for dispensing chalk mixture in my shop, but was only tried by way of experiment, to see if it would keep during the hot summer months from decomposition.

The following formula has been used by me for some time back:

℞.	Cretæ Præpt.	℥ss.
	Sacchari albi	
	Pulv. acaciæ *aa*	ʒij.
	Olei Cinnamomi	gtt viij.

Mix intimately.

For every fluid-ounce of chalk mixture I take one drachm of the mixed powders, and rub them well up with an ounce of distilled water, and of course the mixture is free from acidity. In cases of diarrhœa in children, which generally is the result of fermentation, the glycerin formula seems to be preferable to the one containing sugar, the former mixture being and remaining bland, nutritious and with soothing effect on the bowels; to a certain extent it arrests fermentation, and the glycerin fully protects the gum from decomposition.

Pottsville, Pa., Feb., 1872.

FLUID EXTRACT OF CUNDURANGO BARK.

By Samuel Campbell.

The attention of the Medical and Pharmaceutical professions is now attracted to this drug by the many rumors concerning the wonderful cures effected by its use in the treatment of cancer, syphilis, and kindred diseases, and there is no doubt that many have been deterred from giving it a trial on account of the exorbitant prices charged for it, (altogether speculative), varying from one hundred dollars down to nine dollars per pound. And the glaring inconsistency of difference in price between the commercial *fluid extract* and the drug in substance, the former quoted at *ten dollars* a pint, (representing one pound of the bark), and the latter at eighteen dollars per pound, has induced me to submit the following formula as the result of a series of experiments whereby retail pharmaceutists may prepare and thereby furnish a reliable preparation to their medical patrons, and aid in designating the true therapeutical value, (if it has any), of this drug. The bark was purchased from the well-known firm of McKesson & Robbins, of New York City, in its crude state, and ground under my own supervision, hence its reliability cannot be questioned. The formula is as follows:

Cundurango Bark,	24 troy-ounces.
Alcohol, (95 per ct.)	12 fluid "
Glycerin, (Bower's inodorous),	6 " "
Water,	6 " "

Reduce the bark to a moderately coarse powder (No. 40), and dampen with four fluid-ounces of menstruum. Place a piece of coarse sponge, previously moistened, in the bottom of the percolator, and proceed to pack the dampened powder uniformly and moderately tight. Place a paper or muslin diaphragm over the surface of the drug and pour on the remainder of the menstruum; cover over percolator and allow to macerate four days. If the menstruum should begin to pass through before that period, check it by placing a cork in the neck of the percolator. On the fifth day remove the cork and pour on 24 fluid-ounces of dilute alcohol, and allow to percolate until 22 fluid-ounces are obtained. Set aside and continue the percolation until 8 fluid-ounces more pass through. Expose this in a shallow vessel in a warm place until reduced to two fluid-ounces, then mix and agitate with the original percolate of 22 ounces; when the result will be a fluid extract of a very dark reddish brown color, fully representing the drug, possessing an acrid taste, yet devoid of bitterness.

I have also deemed it interesting to itemize the amount of extractive matter contained in the drug, and pursued the following method for obtaining a sufficiently practical result:

24 fluid-ounces of menstruum weighs	21¼ troy-ounces.
24 " " fluid extract, when finished, weighs	24⅜ troy-ounces.

The dregs in the percolator was afterwards entirely exhausted with dilute alcohol, (requiring about 2 pints), and then carefully evaporated, yielding an extract weighing three drachms, thus proving that 24 troy-ounces of the bark contains 3½ troy-ounces of soluble extractive matter.

Philadelphia, January 22d, 1872.

GLEANINGS FROM THE EUROPEAN JOURNALS.

By the Editor.

Oils of Peppermint and Alcohol.—Hager substantiates his criticism of Puscher's method for the detection of alcohol in volatile oils by means of fuchsin, by a somewhat oxidized oil of peppermint, which

dissolved fuchsin, although Hager's test by tannin proved the total absence of alcohol. He states, however, that the addition of one-half per cent. of alcohol to the volatile oil will preserve it from oxidation for a ten times longer period than without such addition; the oil of crisped mint is preserved in like manner. Ten to fifteen drops of the oil of peppermint containing this addition, and put into a dry test tube, a piece of tannin of the size of a pea is added, slightly agitated and set aside for one hour and a half; the tannin will remain unaltered unless a larger quantity of alcohol has been added, when it will be soft or dissolved; one-half per cent. of alcohol is not indicated by this test in less than two or three hours. The author considers this addition as necessary and justifiable, as the addition of a small quantity of alcohol to absolute chloroform to preserve it from decomposition.*—*Pharm. Centr. Halle*, 1871, 465—466.

Carbolic acid Paper.—C. Homburg, of Berlin, has introduced, for disinfecting purposes, a paste board saturated with crude carbolic acid, so that each square foot contains 100 grammes. The atmosphere may be impregnated with the acid by suspending a suitable sheet in the rooms, the large surface of the paper favoring evaporation. For the disinfection of spittoons, urinals, bed-pans and the like small pieces of the paper are sufficient. The article is sold retail in sheets measuring about seven square feet, at twenty-five cents.—*Ibid, p.* 471.

Oleoresina Filicis Maris.—To prevent the deposition of a precipitate in this oleoresin, Hager recommends to dry the powered rhizome completely over burned lime and to employ anhydrous ether, containing but little alcohol of a specific gravity below 0·728. With an ether of 0·723 specific gravity and a completely dehydrated powder, which is best exhausted in a cylindrical percolator, the oleoresin remains perfectly clear.—*Ibid*, 457.

Solution of Subacetate of Alumina is a mild astringent, and has been used for some years as a local application for suppurating wounds and ulcers, in gleet, some eruptions, intertrigo, &c. Hager gives the following directions for its preparation:

35 parts crystallized acetate of lead, 10 parts litharge and 33 parts water are heated until the sediment has become white; when cold, 100 parts water are added and the whole well agitated. A solu-

* See also Amer. Journ. Pharm., 1871, p. 201.

tion of 31 parts crystallized sulphate of alumina in 130 parts cold water is added, repeatedly agitated and, after settling in a cool place, filtered. A little sulphuretted hydrogen is passed through the filtrate to remove traces of lead remaining dissolved in the alumina solution, and the sulphuric acid is precipitated by a little acetate of baryta; the sulphate of baryta remains in suspension for a long time, but is easily removed by agitation of the liquid with five parts purified animal charcoal and filtering. The filtrate has a specific gravity of 1·025 to 1·026, and contains 5 per cent. of the salt.

This solution may be mixed and even heated to boiling with five times its volume of 90 per cent. alcohol without becoming turbid, but gelatinizes with tannin solution.—*Ibid.*, 473—476.

Ozonized water, which has been repeatedly branded by Hager as a swindle, has been examined by Prof. Boettger (Ph. Cent. Halle, 1871, 489), who found it to contain a little nitrous acid, and by Dr. Albert Kremer (Ibid., 1872, 2) who found a sample to contain a trace of binoxide of hydrogen, but no ozone.

New test for Alcohol.—Berthelot observes that benzoyle chloride $C_{14}H_5ClO_2$ is not readily decomposed by cold or lukewarm water; if, however, alcohol is present, benzoic ether is at once formed which dissolves in the excess of benzoyle chloride; a drop of the latter, if now heated with potassa solution, dissolves readily, while the ether is not acted upon. The reaction is very evident if 20 or 25 c. c. of water are used containing only 1 per cent. of alcohol. But even with a few c. c. of water containing only one thousandth of alcohol, the odor of the ether is still very manifest.—*Répertoire de Pharm.*, 1871, *Nov.*, 178.

To distinguish Grape- from Fruit-Wine.—Neues Jahrbuch für Pharmacie xxxvi. p. 314–322, contains an interesting communication, signed "M.," in which it is stated that fruit-wines (of apples and pears) contain phosphoric acid combined with lime, while grape-wines (from the Neckar river) contain phosphoric acid in combination with magnesia. If the filtered liquids are supersaturated with ammonia, distinct granular crystals will form from cider on the side of the glass cylinder after some hours, while the precipitate from grape wine is pulverulent to the eye but crystalline under the microscope. Both precipitates dissolve in dilute acetic acid; the solution of the cider precipitate separates, upon the addition of oxalate of ammonia, oxalate

of lime, and then yields with ammonia and sulphate of magnesia a precipitate of ammonio-phosphate of magnesia. The solution of the grape-wine precipitate separates by an oxalate a little oxalate of lime, and then precipitates, on supersaturation with ammonia, all the phosphoric acid as magnesia salt, so that a solution of magnesia will not disturb the clear liquid. One litre cider (from pears) yielded 0·369 PO_5, the same quantity of Neckar wine 0·366 PO_5. The author found also that his grape-wines naturally contain malic acid. One litre Malaga wine yielded 0·640 PO_5. Further experiments with fruit- and grape-wines of an undoubted purity are very desirable.

Pure Soda hydrate by Crystallization.—This process, proposed by O. Hermes, has been tried by Klas Lindroth, who observed that a very impure solution of soda of specific gravity 1·215 would not crystallize at a temperature of —22° C. (—17° F.), but crystallized readily after concentration to 1·375 spec. grav. After draining the crystals in a well-covered glass funnel, they were found to contain mere traces of carbonate and chloride.—*N. Jahrb. f. Pharm.*, 1871, *from Upsala Läkareför. Forhandl.*

A new delicate test for Ammonia has been observed by Lex. Liquids containing minute quantities of ammonia assume a green color when treated with carbolic acid and afterwards with chlorinated lime.—*Ibid., frvm D. Indust. Ztg.*

Collodium Cotton and Creasote.—According to Wirth, collodium cotton yields with beechwood tar-creasote a clear liquid, which, at first thick, soon becomes limpid and homogeneous. Coal tar-creasote yields, after continued agitation with the cotton, a gelatinous and, for the greater part, consistent mass.—*Ibid., from Pharm. Ztg.*

Testing Balsam of Peru.—This balsam has a specific gravity of 1·140 to 1·160, and therefore sinks if added to a solution of one part of table salt in four of water, which has a specific gravity of 1·125. The addition of even a small quantity of a fixed oil to balsam of Peru renders it lighter.—*Ibid., from Apoth. Ztg.*

Galega officinalis, for improving the secretion of milk, was recommended by Gilles and Langenhagen. Dr. Oeffinger has used it in the form of syrup with good success, and reports that not only the quantity of the milk is increased, but that it is likewise improved in quality. In one case the milk consisted before the treatment of 92·4

water, 3·8 sugar, 1·9 butter, 2·7 casein and 0·1 salts. On the second day after commencing to use galega, it was composed of 90·2 water, 4·4 sugar, 2·3 butter, 3·6 casein and 0·1 salts.—*Ibid., from Aerztl. Mitth. a. Baden.*

Rudbeckia laciniata, Lin., in Europe.—An interesting history of the introduction of this North American plant into Europe, is given by A. Kerner, in *Zeitschr. d. allg. œsterr. Apoth. Ver.*, 1871, No. 35. It appears that it was received and cultivated at Paris by Vesp. Robin in the beginning of the seventeenth century, and in the beginning of the following century was used as an ornamental plant in many parts of Europe. It is now found wild in many parts of Northern and Eastern Germany, Austria, Hungary and Switzerland.

Test solutions for Grape-sugar.—Julius Lœwe recommended, in 1870, a solution of oxide of copper, soda and glycerin, which he reports to be entirely unaltered, after having been kept for about eighteen months in the dark and in diffused daylight. 15·305 grm. hydrated oxide of copper (equal to 40 grm. pure crystallized copper sulphate), 30 grm. glycerin, 80 c. c. soda solution, sp. gr. 1·34, and 1·60 c. c. water are heated with 160 c. c. water in a water-bath until solution is effected, when it is diluted to 1155 c.c., 10 c.c. of which are equivalent to 0·050 grm. anhydrous grape sugar; the solution is not decomposed by boiling.

The author has also modified Bœttger's reagent so as to obtain a permanent solution of bismuth, as follows: 15 grm. subnitrate of bismuth, 30 grm. glycerin, 60 to 70 c.c. soda solution, sp. gr. 1·34, and 150 to 160 c.c. water yield, on heating in a water-bath, a clear solution, which may be diluted to 700 or 800 c.c. without producing a deposit.—*Zeitschr. f. anal. Chem.*, 1871, 452.

NOTES ON PAREIRA.

By Edward R. Squibb, M. D.

Pareira Brava is a drug which has withstood the mutations of therapeutics and commerce for nearly two hundred years, and it is a singular and significant fact, in view of its commercial history, that it has sustained a sound reputation with many critical observers.

It appears to have been introduced to European practice from Portugal, but its sources were Mexico, tropical South America, and the West Indies. Under a name so indefinite as "wild vine," or "bas-

tard vine,"—the translation of the name Pareira Brava,—it is hardly possible that the markets should have always been supplied from the same plant, even after its botanical source was determined, and hence the varying descriptions of different authorities may be accounted for. The writer has been familiar with it, both in its use and in its market character, for more than twenty-five years, and for the last half of this period supposed he knew the substance with some degree of accuracy, as its appearance was more uniform than that of most drugs. It, however, never had more than a very general agreement with any of the descriptions given of it; and the almost universal testimony of those physicians who knew it best was, that although very efficient in the treatment of chronic diseases of the mucous membranes of the urinary passages, it was only useful when given in doses very much larger than those prescribed by the books.

It has so happened, that in the New York market the trade in this drug has been largely, though not exclusively, confined to one drug house, and its appearance, as met with here, is identical with occasional samples seen from other cities. Some ten years ago, the annual sales did not exceed three or four hundred pounds, and the price was fifteen to twenty cents. A Portuguese merchant, stimulated by this high price, imported a lot of some ten thousand pounds, and unable to sell it except in small lots at the expected prices, stored it for a year or two. This was found to be expensive management of so bulky an article, and the lot was finally sold at eight cents, and supplied the market for years. Another lot of about half as much shared the same fate, and fell into the same hands. The fate of these two lots and the glut of the market seems to have stopped importation entirely, and by 1871, when the annual sales had reached three to four thousand pounds, the supply became exhausted. In resorting to foreign markets it was found scarce, and to be had only in small lots, and these, on arriving here, were held at seventy-five cents to a dollar a pound. In looking critically through one of these small lots as a purchaser, the writer was surprised to find nearly one-half of it so entirely different from any hitherto seen, that he rejected it, and at once pronounced it a fraudulent adulteration or substitution, made in the interest of the scarcity and high price, and carefully selected out for purchase that only which he had seen before. Some specimens of this supposed fraudulent pareira were, however, taken for examination, and were found to agree well with some of the older descriptions. A

plate given by Pomet in his History of Drugs, published in 1737, and a close examination of the structure, &c., convinced the writer that this was the true pareira root, and that what he had heretofore seen was the stem.

In a critical review of the descriptions of Wood and Bache, and Pareira, these descriptions were found to apply to both, as nearly as such descriptions generally do to foreign drugs, but that they applied much better to the ligneous woody stem, which is comparatively insipid and probably inert. The root is very much darker, almost black externally, and both the annular and vertical wrinkles are very much larger and more prominent. It occurs in shorter sections than the stem, and knarled pieces are found eight inches to a foot in diameter. The texture is far less compact than that of the stem, while the beautiful arrangement of the consecutive rings seen in a cross section, which requires a glass in the compact stem, is well seen with the naked eye in the root. The sweetish and afterward bitter taste of the woody stem is very feeble, and even when in the finest powder, it yields very little extract to any menstruum. The taste of the root is, however, very much stronger, and yields at least twice as much extractive matter to the menstrua. Specimens illustrate the difference between the root and stem much better than any description, and will render further explanation unnecessary.

It thus appears that, for some twelve or fifteen years past, this market has been supplied with the comparatively inert stem, instead of the root of pareira; and that the ideas of at least one careful purchaser had become so fixed upon the intractable woody stems, that when the roots did appear, they were very nearly rejected as a fraudulent substitution. The importations of this year thus far have come from the European markets in small lots, and have been a mixture of root and stem, but less of the root than stem, and the chief object of this note is to attract attention to the drug, and create such a demand for the proper root portion, that after the present scarcity is over, and the market comes to be again supplied direct, the stem may be rejected.

There is no doubt whatever as to the peculiar efficacy and utility of this drug within its legitimate sphere in therapeutics, and the wonder is that it has been able to sustain its well-tried and time-honored reputation upon the feeble medicinal properties of the stem.—*Proceedings of the Amer. Phar. Assoc.* 1871.

Brooklyn, Sept., 1871.

ON THE SO-CALLED AFRICAN SAFFRON.

By Prof. John M. Maisch.

Nearly a year ago, my friend A. E. Ebert sent me a sample of what had been offered in Chicago under the name of African saffron, and was in the hands of an agent of a New York house. I also procured from Breithaupt & Wilson, New York, a sample under the same name, and found the Chicago and New York so-called African saffron alike, namely, to be the florets of Carthamus tinctorius, Cir., the well-known safflower or dyer's saffron, but more broken than what we usually see under this name and that of American saffron; it is likewise more discolored. This plant is originally indigenous to the East Indies, but is very extensively cultivated in Western Asia, Southern Europe, and Northern Africa, particularly Egypt. Whether this so-called African saffron was really imported from Africa or not, I have no means to ascertain; but it is not improbable that, with the staple drugs regularly shipped from Alexandria, Egypt, this lot of carthamus may have likewise been exported in consequence of the failing supply from Europe and other places.

Through the kindness of Messrs. McKesson & Robbins, New York, I obtained three samples of so-called African saffron, two of which likewise proved to be carthamus; one of these samples was on hand in New York, and offered at $3.50 per pound; the other, the better quality as far as could be judged from the small samples, was, previous to its arrival, offered at 75 cents per pound.

The third of these samples, representing thirty pounds, held in London, England, and for which offers were solicited, was *not* carthamus; it consists of the corolla of a plant probably belonging to the natural order *Scrophulariaceæ*, which in their dried condition are of a dirty greenish brown color; they are about one inch long, the tube being about one-tenth inch in diameter, and three-quarter inch in length, inflated in the throat and smooth, the limb somewhat bilabiate, one sterile stamen, with the filament nearly free, the fertile stamens didynamous. Infused in cold water they impart an intense yellow color to it. The total absence of calyx, ovary, and even style, renders it impossible to express an opinion as to the genus from which this so-called saffron may have been derived. It is unquestionably a new claimant for public favor as a dye-stuff, its unsightly appearance probably interfering with its successful introduction. It is too dark colored and too coarse in its structure to be used as a sophistication of, or substitution for, true saffron.

As far as my experience extends, the article which last winter (1870–71) was in the American market under the name of African saffron, was carthamus, while about the same time a small lot of (probably) scrophulariaceous flowers were offered in the London market under the same name.—*Proceedings of the Amer. Pharm. Assoc.*, 1877.

PREPARATION OF ABSOLUTE ALCOHOL.

By E. Erlenmeyer.

The processes mostly in use for the preparation of *larger quantities* of absolute alcohol are very tedious, because the dehydrating agents, like carbonate of potassa, anhydrous sulphate of copper, anhydrous ferrocyanide of potassium, burned lime, caustic baryta, &c., combine with the water only after prolonged contact. The three first-named substances do not yield perfectly absolute alcohol even after several days' contact and frequent agitation.

Mendelejeff,* in his valuable researches on the combinations of alcohol with water, has carefully investigated the various agents for the production of absolute alcohol, and prefers caustic lime to all others. He employs alcohol having a specific gravity not higher than 0·792, at 20° C., and pieces of burned lime projecting above the surface, when the alcohol will be dehydrated in two days; but, if the distillation is desirable after 2 or 3 hours, he directs the two articles to be previously heated, for half an hour, to 50 or 60° C. With this manipulation, however, only the middle portions of the distillate are obtained anhydrous.

I have altered Mendelejeff's directions, so as to boil upon the water bath, for one-half to one hour, in a still connected with a return cooler; afterwards the cooler is reversed and the alcohol distilled, when the entire distillate is obtained in the anhydrous condition. If the alcohol contains over 5 per cent. of water, it is merely requisite to subject it twice or three times to the same treatment. Should it contain much water, then the lime must not, on the first boiling, project above the surface of the alcohol. It is better to fill only half of the space occupied by the latter, with pieces of lime, otherwise its rapid hydration endangers the safety of the still. Several litres of spirit may by this method be converted into absolute alcohol within a few hours.—*Annal. der Chem. und Pharm.*, 1871, *Nov.*, 249.

* Zeitschr. f. Chemie, 1865, 260.

ON POWDERED CAMPHOR.

By John C. Lowd.

Query 2.—How may Camphor be reduced to a fine powder, and retained in the pulverulent condition?

The query on this subject having been referred to the writer, he hereby submits to your honorable body the result of an experiment.

The various methods for reducing camphor to a fine powder, suggested by different writers, are singularly deficient. The objections are the expense and incomplete results, through the moist condition of the powder when precipitated from an alcoholic solution, rendering it unavailable for the purposes for which it is largely employed in the manufacture of errhines, tooth powders, &c.

Camphor possesses the advantageous property of resublimation without losing any of its valuable qualities. This furnishes a suggestive hint capable of being carried out in the preparation of a fine powder. The method I have tried with complete success, consists in vaporizing the camphor from a retort into a large chamber, and its collection in the form of a fine dry powder.

The apparatus used consists of a four-wick lamp, containing one pint of alcohol; a copper retort four inches diameter by ten inches high, having a curved neck fourteen inches long and two inches diameter; a chamber or receiver made of strong paper, rendered impervious by any suitable sizing. The paper is stretched upon a light frame of wood, so as to form a cubical chamber of three feet in length, breadth, and height, with an aperture on one side within a foot of the top, in order to receive the neck of the retort. Care must be taken to lute around the joint where the retort connects with the receiver on account of the inflammability of the vapor. The quantity used is one pound of camphor, and the time required to sublime it about thirty minutes.

The advantages of this process are its availability and economy, the perfect condition of the powder as to its purity, dryness, and degree of fineness. It will retain its pulverulent condition if kept in full bottles, well worked, in a cool place.—*Proceedings of the Amer. Phar. Assoc.*, 1871.

Boston, Mass.

MUCILAGE OF ACACIA.

By R. Rother.

Mucilage of gum arabic prepared by the officinal method is remarkable for its instability; only a few days, and under peculiar conditions a few hours, sufficing to render it sour and consequently unfit for medicinal use. Mucilage for medicinal purposes is an article of great utility to the pharmaceutist in the making of pills, emulsions, and other mixtures with which gum is prescribed. For these purposes it is always far superior to the powdered gum. But on every occasion it should either be quite recently prepared or otherwise preserved from change. The moderately circumstantial and rather tedious operation of dissolving the gum when in the original pieces debars the possibility of an expeditious process for extemporaneous application. In view of these facts, the addition of the least objectionable preservative can only meet with approval. Glycerin has been recommended and used for nearly everything, and there exists not the slightest doubt but that it enters largely into pharmaceutical productions. Now while glycerin may be positively injurious in some cases, it has become actually indispensable for others. Too frequently it is introduced where there is no cause for its presence, and often where its influence would be beneficial, the proportion was not sufficient to be effective.

The decomposition of mucilage of acacia when once begun cannot be checked or even retarded with glycerin, but can be prevented by a sufficiency of glycerin, if this be present before any change could supervene. This is only secured by mixing the glycerin with the water before its addition to the gum. Next important to the solvent is the manner in which the solution of the gum is effected. This operation can be most promptly and thoroughly performed by placing the original pieces of the gum into an appropriately sized bottle, and adding the mixture of glycerin and water. The bottle is then securely corked, the whole well shaken, and the bottle laid down on its side in a horizontal position; after 10 or 15 minutes the layer of agglutinated gum is moved into a vertical position by revolving the bottle; after the column has subsided, the bottle is farther revolved in the same direction. Having thus moved the bottle three or four times during the interval of about twelve hours, complete solution has taken place. The mucilage is now well shaken and strained through muslin. The straining can be very rapidly done by placing a proportionately large sheet of

moistened muslin over a funnel supported on a bottle; the funnel is then filled with the liquid, two opposite sides of the strainer folded together and the ends twisted in opposite directions. When all the liquid has been forced out, a fresh portion is similarly treated until all has been strained. The proportion of the glycerin to be used is one in eight of the product. The following formula is in officinal proportions, only that eight ounces of water is replaced with an equal measure of glycerin; one fluid-ounce contains three drachms of acacia, and one fluid drachm of glycerin:

Take of Acacia, in pieces, 24 troy-ounces.
Glycerin, 8 fluid-ounces.
Water 2½ pints.

Mix and conduct the process as above directed.—*Pharmacist and Chemical Record, Jan.*, 1872.

SACCHARATED COD-LIVER OIL.

M. Tissier, in the November part of the *Journal de Pharmacie et de Chimie*, publishes a method for preparing a granulated saccharate of cod-liver oil, for which he claims several advantages, and which may be flavored by orange, vanilla, etc. The ingredients are as follows:—

White Gelatine, . . .	4 grms.
Distilled Water, . . .	25 "
Simple Syrup, . . .	25 "
Finely Powdered Sugar, . .	50 "
Pure Cod-Liver Oil, . . .	50 "

The gelatine should be cut and placed in a wide-mouthed bottle; the water and syrup added, and the whole heated in a water-bath until dissolved. The cod-liver oil and the sugar should next be well rubbed up together in a mortar and then the warm solution of gelatine stirred in, the stirring being continued until the mixture is quite cold.

After some time the mass will present the appearance of a dense homogeneous jelly; it is then necessary to add a sufficient quantity of finely-powdered sugar to form a firm paste, weighing 250 grms. The paste is spread upon a marble slab, divided into small pieces and left for some hours to harden. It is then divided into small pieces the size of a lentil, which, after further drying, become sufficiently firm to allow of granulation in a mortar. The drying of this granu-

lated powder is accomplished on a stove at a temperature of 30° to 35° C. The product will contain one-fifth of its weight of cod-liver oil. It should be kept in well-closed bottles.—*Pharm. Journal and Transactions, Jan.* 20, 1872.

ON THE ABSORPTION OF BLUE OINTMENT AND OF SUBLIMATE BY THE UNWOUNDED SKIN.

A microscopico-chemical study has appeared by Professor Dr. Neumann, which is very interesting. He says there are five questions to answer to:—

1. Does mercury, rubbed into the unwounded skin, penetrate through it into the organism?
2. What are the ways by which mercury enters the body?
3. Can the *hypothesis* (that mercury enters the body in the form of metal, and that it circulates in that form in the blood) be proved by the microscope?
4. Can the mercury rubbed into the skin be found in the interior organs chemically or microscopically?
5. Is corrosive sublimate, dissolved in a bath, received by the unwounded skin?

Dr. Neumann asserts that the known physical properties of the globules of mercury in blue ointment are only appreciated under a certain limit, beyond which limit even the best microscopist can no longer make a difference between globules of mercury and bubbles of air, molecular grease, molecular detritus, microconus, carbonate of lime.

That question can only be resolved by combined method:—

a. First the entering of the globules must be proved.

b. Then their presence in the blood and in the organs must be searched for chemically.

The best method for that is Professor Schneider's, who makes an amalgam by small leaves of gold, and by the mercury excreted from the body, when a metallic mirror is created; then by combination with vapours of iodine, the iodide of mercury appears by its characteristic color and crystals.

Experiments have been made on dogs, rabbits, frogs, on the skin of new-born children, and on living men, and on those parts of the body which were destined for amputation; then on bladders and pericardium.

In order to *prevent* on living animals the *licking* off of the rubbed parts, bandages were applied, also the injection with curare was made after long rubbing, or with a solution of chloral, after which experiment the animal lives still some hours (27 hours—4 hours). But the skin should not be excoriated by rubbing. Gold coins were also interpolated in the subcutaneous tissue, and in the cavity of the chest and abdomen to detect the amalgamation.

The *opinion* that the mercury enters into the apparatus of breathing during the rubbing is refuted by the proof that mercury changes into vapor only by high temperature. Other *physiologists* object that very thin molecules of mercury which are suspended in the air may enter in the body by the mouth. Dr. Neumann refutes this opinion by the following experiments. He separates the head and the anterior part of the body by a correspondent aperture in the window, from the atmosphere in which the inunction takes place, so that no particle of mercury could be breathed. Of those experiments the results were the following:—By rubbing the blue ointment in the unwounded skin, globules of mercury enter by the air follicles as far as the bulb in the sebaceous glands, which have an open aperture, and then they enter in the superior part of the sudoriferous glands. But Dr. Neumann could not find what direction the globules take from there till the apparatus of circulation, and in what form; probably they are changed into sublimate, and are resolved by the superficial lymphatic system.

On the contrary, the rubbed mercury as blue ointment can in the blood, and in the interior organs only be found by chemical methods, also the sublimate when it is received by the unwounded skin.

Globules of mercury could never be found in the subcutaneous tissue and in the cutis vera.—*Med. Press and Circular, Dec.* 13, 1871.

A METHOD FOR THE ESTIMATION OF MORPHIA IN OPIUM.

By John T. Miller.

The author, in endeavoring to make use of the liberation of iodine from iodic acid by morphia, for the estimation of this alkaloid in opium, obtained at first unsatisfactory results, to clear up the causes of which numerous experiments were tried, only a few of which need be mentioned:

1. Some *narcotine* was added to the standard morphia solution,

then iodic acid, and after the mixture had stood a few minutes it was shaken with carbon disulphide. The feeble color of the latter showed plainly that it contained less than the usual quantity of iodine.

2. The experiment was repeated, but with this difference, viz., the shaking with carbon disulphide was performed immediately after adding the iodic acid. The full color was now obtained, the liberated iodine having been seized by the disulphide before the secondary reaction could take place.

3. Similar experiments were tried with *codeine*, the invariable result being a diminution in the amount of iodine set free.

4. *Thebaine* was found to act in the same direction as codeine.

5. Iodine water, when added to a slightly acid solution of *papaverine*, produces a red-brown precipitate, which gives with chloroform a yellow or brown solution; but carbon disulphide abstracts the iodine from the compound and liberates the papaverine. The presence of the latter in the sample solution is, therefore, of no consequence.

6. Though solution of *narceine* does not reduce iodic acid, yet after being heated with lime or potash it has that effect. But the proportion of narceine existing in opium appears to be so minute, there can be no risk of error from this source.

The requisite conditions being now better understood, the samples were examined afresh by the reduction process, and this time the results were deemed satisfactory.

This sketch of the course of the inquiry may serve to explain some parts of the process finally adopted, which I will proceed to describe:

Apparatus.—Three strong tubes of colorless glass, like ordinary test-tubes in form, about eight inches in length, and of exactly equal bore, which should be about half an inch. At first I used graduated tubes, but afterwards found it better to employ separate measures of smaller calibre, viz, a pipette to deliver 100-grain measures; a tube-measure for 50 and 100 grain measures; and a smaller one for 5, 7·5 and 10 grain-measures.

Standard Solution of Morphia.—Weigh off accurately one grain of pure and well dried morphia, and dissolve it in 50 grain-measures of diluted sulphuric acid, B. P., and sufficient distilled water to make the volume exactly 1000 grain-measures. This solution will keep without appreciable change for some weeks.

Solution of Iodic Acid.—Place in a flask 100 grains of iodine, 100

grains of potassium chlorate, 1 fluid-drachm of strong nitric acid and 2 ounces of water. Heat the mixture until the iodine is perfectly oxidized; nearly neutralize with sodium carbonate, then add an excess of solution of barium chloride. Wash the barium iodate by decantation, and boil it for half an hour with a fluid-drachm of strong sulphuric acid and 3 ounces of water. When cold, filter and add water to make the bulk 6 fluidounces.

Sample Solution.—If the opium is in the moist state, dry 100 grains on the water-bath, and after noting the loss in weight reduce it to *fine* powder. Put 20 grains of the powder into a two-ounce flask with one grain of oxalic acid and half a fluidounce of alcohol, sp. gr. 0·838, and, having attached a condensing-tube to the flask, place the lower part of the latter in water hot enough to cause the spirit to boil gently, and continue the boiling for half an hour. Filter into a porcelain dish, and wash the residue with half a fluidounce of hot spirit. Add to the filtrate half an ounce of water, and evaporate down to about a quarter of an ounce, stirring frequently, then add an ounce of cold water. After the mixture has stood for ten minutes or so, remove the precipitated resinoid matter by the filter, and wash it with a little cold water, adding the washings to the filtrate. Boil the latter with 10 grains of slaked lime for two or three minutes, filter, and wash the calcium compounds with hot water. Slightly acidulate the filtrate with solution of oxalic acid, and evaporate it down to about a fluidounce. After cooling, add 12 grains of caustic potash and set aside for a quarter of an hour; then filter, and wash the precipitate with a drachm of liquor potassæ, diluted with two or three times as much water. Divide the filtrate into two exactly equal portions: pour one of these into a 1000-grain measure, add 100 grain measures of diluted sulphuric acid, B. P., and water up to the mark and mix well. Finally, shake the small quantity of solution required for experiment—about half an ounce—with a fourth of its bulk of carbon disulphide, and pass it through a filter.

The Experiment.—Measure off with the pipette 100 grain measures of the sample solution, and transfer it to one of the trial tubes, add 100 grain measures of carbon disulphide, and, lastly, 50 grain measures of iodic acid solution; then immediately close the tube with a sound cork and shake briskly for *half a minute.* The rose-colored solution of iodine quickly subsides, but its brightness is sometimes rather obscured by a slight filmy deposit on the glass. In this case

pour the contents of the tube into a clean one. Take next 100 grain measures of the standard solution of morphia, and, using a fresh tube, repeat the operation just described. Compare now the two rose-tinted liquids by holding the tubes side by side between the eye and a white cloud, or placing them against thin white paper attached to a window-pane. If the colors are equal in intensity, the powdered sample contains 10 per cent. of morphia. If unequal, add to the deeper one carbon disulphide in small successive measured quantities—say of 5 or 10 grain measures at a time, as may seem necessary—gently mixing it in with a glass rod. When by this means the tints have been rendered equal in depth, the calculation is simple.

Let v = volume in grain measures of standard color;

Let v' = volume in grain measures of sample color;

then $\frac{v' \times 10}{v} = x$ = percentage of morphia in powdered sample.

And if w = percentage loss of weight in drying, $\frac{100 - w \times x}{100}$ = percentage of morphia in moist sample.

Precaution.—The carbon disulphide used must remain colorless when shaken with solution of iodic acid.

In order to test the ability of the eye to discern slight inequalities of tint, the relative quantities of iodine in the standard and sample colors were sometimes estimated at the end of an experiment by Dupré's method. This was done by removing the supernatant aqueous liquid with a pipette, washing the solution of iodine with distilled water, transferring it to a stoppered bottle. and adding, with vigorous shaking, weak chlorine water from a burette until the color just disappeared. The results are given in the subjoined table, and show, I think, that the eye has a fair claim to be trusted. When a number of morphia determinations have to be made, the use of this iodimetric process is convenient, as only a single daily reference to the standard is then needed.

The time required for determining the morphia value of opium on the above plan is about two hours and a half. As regards accuracy and reliability, I may state, that so far as my experiments have gone—and they have not been few—the results have appeared, after careful scrutiny, to be nearer approximations to the truth than those obtained by the ordinary methods by precipitation. I have, therefore, much confidence in the process. Nevertheless, I am ready to admit

that an analytical method which deals, as this does, with a substance so complex and variable in composition as opium, must have an extended trial before its reliability can be placed altogether beyond doubt.

Table of Results.

Sample.	Percentage of crude morphia obtained by B. P. process.	Weight of precipitate after washing with chloroform.	Amount of real morphia in precipitate estimated by reduction process.		Percentage of real morphia in sample as determined by reduction process.	
			Colorimetric.	Iodimetric.	Colorimetric.	Iodimetric.
1	13·8	12·8	11·0		11·3	
2	12·0	10·8	9·4		10 0	
3	11·2	10·0	8·8		9·2	
4	10·2	9·3	7·7	7·81	8·0	8·1
5	5·8	5·6	5·0		5·4	
6	16·2	15·0	13·6		14·0	
7	6·4	6·1	5·5	5·76	6·4	6·43
8	10·0	9·4	9·0		10·0	
9	13·8	12·6	11·0	11·2	11·5	11·8
10	11·3	10·6	9·6		10 0	
11	14·2	13·0	11·6		12·0	
12	6·1	5·7	5·0	5·13	5·1	5·28
13	10·4	9·8	8·7		9·0	
14	12·6	12·4	12·0		12·5	
15	11·4	10·1	8 8	8·6	9·6	9·5
16	9·5	8·7	7·6	7·4	8·3	8·48
17	9·4	9·2	8 8		9·5	
18	17·4	15·8	13·8	14·0	14·5	14·2

Sheffield, October, 1871.

COMPLEX NATURE OF CATHARTINE.

By E. Bourgoin.

After first referring to the researches made by Lassaigne and Fennelle, in 1821, on the senna leaves, and allusion being made to the cathartine then discovered and considered to be the active principle of the drug alluded to, the author states that, having occasion to prepare cathartine, he has, on experimenting with it, found it to be made up of chrysophanic acid, a dextrogyre glucose, and chrysophanine. The cathartine, prepared as described by Lassaigne and Fennelle, is first treated with ether, whereby the chrysophanic acid is eliminated; next, the residue is treated with water, whereby the dextrogyre glu-

cose is dissolved; the chrysophanine is best obtained by treating the cathartine first with ether, next dissolving it in water, and precipitating that solution with acetate of lead, the chrysophanine combining with lead, and being set free by treating this lead compound with sulphuretted hydrogen. When, however, it is desired to obtain a large quantity of chrysophanine, it is best to work with a strong senna infusion, from which the mucilage is thrown down by means of alcohol, the clear solution next treated with neutral acetate of lead solution, further treatment with sulphuretted hydrogen, filtration, evaporation of the clear liquid to syrupy consistence, and precipitation with alcohol at 90 per cent.; the precipitate (crude chrysophanine) is purified by means of alcohol, until that liquid runs off colorless. The properties of chrysophanine will be described by the author in another paper.—*Chem. News*, *Jan.* 19, 1872, *from Compt. rend.*, *Dec.* 18, 1871.

THE ODORS OF PLANTS.*

By James Britten.

The subject of the phenomena of odor and color in plants, and of the causes which induce or govern them, is one of considerable interest; and the relations which exist between the two are sufficiently striking. Thus, it has been statistically ascertained, and a very little reflection will confirm the conclusion, that white flowers stand highest in number among fragrant species, next yellow, then red, and lastly, blue. And it is among white flowers that disagreeable odors are most seldom found, while orange and brown are frequently unpleasant in scent. In such calculations, however, it must be remembered that the appreciation of odors is by no means the same to different people: scents which are agreeable to one, are often the reverse to another. The strong odor of *Tagetes patula* and *T. erecta* is not objectionable to some; while others, besides the well-known fox hunter, are of opinion that the Sweet Violet is a "stinking flower." There are even some unhappy beings—we trust they are but few—who cannot endure the scent of a rose. The sense of smell, too, is much more acute in some persons than in others; and we have frequently remarked an analogy to color-blindness in the want of perception of odors manifested by some among our friends.

A good summary and comparison of scents will be found in M.

* Reprinted from the *Gardener's Chronicle*.

Lecoq's "Etudes sur la Géographie Botanique de l'Europe," from which some of the following details are borrowed. In almost every case, however, additional instances of similarity will suggest themselves to the reader, especially if he be gifted with a keen nose, and a good memory for smells. In the first place, it may be laid down as a general principle, that a larger proportion of white flowers are fragrant than those of any other color; yellow comes next, then red, and lastly, blue; after which, and in the same order, may be reckoned violet, green, orange, brown and black.

Among white flowers, certain types of scent are very prevalent. Thus many umbelliferous plants have a strong odor of honey, which is very marked in *Anthriscus sylvestris*, and is found also in the aquatic ranunculi; *Eucalyptus glandulosa* recalls the same scent; and in the almond and apricot we encounter it, qualified by that flavor of prussic acid which is so perceptible in the hawthorn when one does not inhale too closely the fragrance of its flowers. This scent is intensified in *Spiræa Ulmaria;* in *S. Filipendula* it is modified by a *soupçon* of the odor which is found also in the privet and in *Actæa spicata*, and attains distinctness in the elder. Many rubiaceous shrubs have similar odors, and resemble certain *Apocyneæ;* and the *Philadelphus coronarius* has so much affinity in scent with the orange, that it is often called the "mock orange bloom." Other types of scent among white flowers are presented by the white lily, the jasmine, the tuberose, and the lily-of-the-valley. It is curious to observe that, among cultivated plants, white-flowered varieties are very often the most—if not the only—fragrant ones; this is the case with the white petunia (?) and a commonly cultivated white-flowered verbena (?). It is also worthy of notice that many of the scents among white flowers are only pleasant when in very small quantity and become absolutely disagreeable when intensified; this is the case, especially, with the hawthorn and white lily.

Among yellow flowers, the scent of the orange is often found, we may note, in the common broom, and in *Biscutella saxatilis* and other yellow Crucifers. The curious alcoholic odor which has earned for *Nuphar lutea* its English name of "Brandy-bottle" is found also in the yellow *Brugmansia floribunda*, as well as in the yellow catkins of *Salix caprea*. *Hippocrepis comosa* recalls the smell of cheese, and this odor attains its maximum in the blossoms of *Genista Scorpius*. The honey scent is found in several yellow-blossomed plants, notably in *Galium verum* and *Mahonia intermedia*.

Roses and pinks occur to one at once, when sweet-scented red-flowered plants are referred to; but with these exceptions it is difficult to characterize the odors of plants belonging to this series. But among lilac flowers a great resemblance in scent may be traced; thus the sweet odor of vanilla, which is so powerful in the garden heliotrope, is found again in different degrees of intensity in *Petasites fragrans*, *Valeriana officinalis*, and the common lilac; we meet with it also in *Plantago media*, which is exceptional among plantains in its fragrance and in its colored corolla.

Blue flowers are very rarely fragrant, and when so, only in a slight degree. The blue variety of *Phyteuma spicata* exhales a faint perfume, and one or two campanulas are slightly scented. *Franciscea Hopeana* has, however, deliciously fragrant blossoms, which recall at once the scent of the orange and the tuberose; but although at first blue, they soon lose their color and become white.

Certain species, the flowers of which are of sombre hues, are very fragrant. Thus in the early flowering *Calycanthus præcox*, one finds a multitude of odors, such as rose, jasmine and tuberose, harmoniously blended. The night-flowering stock (*Matthiola tristis*), *Hesperis tristis*, and one or two more, compensate by their fragrance for the absence of beauty of color; while other dark-flowered plants, such as the henbane, have an intensely disagreeable odor.

Thus we see that it is not the most brilliant flowers which are the most fragrant; indeed, many of the most brilliant in color have no scent whatever. The beautiful *Malvaceæ* of equinoctial America, the pelargoniums of the Cape, the passion-flowers (?), the gladioli, and some of the most striking *Leguminosæ* are destitute of perfume.

One or two conclusions as to the geographical distribution of sweet-scented plants may be arrived at from the preceding facts, united with many more which space will not permit us to cite. We have seen that a large proportion of pale and white blossoms are fragrant; and it is ascertained that these predominate in northern regions. We may therefore conclude that the relative number of odorous flowers is greater towards the poles than towards the equator. It would seem that the too powerful action of light and heat is opposed to the emanation of the odors of flowers; and we see many species, which are scarcely fragrant during the day, become so in the evening or at night. But if the odors emitted by the blossoms are more frequent in the North, the reverse is the case with the essences enclosed in the glands.

Plants with fragrant leaves, aromatic fruits, and wood penetrated with essential oil, are scarcely found except in warm or tropical countries. —*Pharm. Journ. and Trans., Jan.* 6, 1872.

ON MEAT AND THE METHODS OF PRESERVING IT.

By H. Endemann, Ph. D.

Meat is composed of various substances, which, up to the present time, are not yet all known. Their number is being increased every few years by new discoveries, which however do not always meet the expectations of over-zealous admirers of Liebig's Extract. Theories, which attribute to newly-discovered substances the life-giving power which has made the extract of meat a valuable medicine, must be confirmed by physiological experiments; whereas, thus far, they have failed entirely to assign a specific function to any of the products of the decomposition of albuminous substances formed in the living organism. I may therefore avoid any omission in the enumeration of the component parts of meat, by grouping all these substances under the general heading, "Products of the Decomposition of Albumen."

Meat consists of fibrin and albumen (about 25 per cent.) and the rest of its solid constituents (about $2\frac{1}{2}$ per cent. in the average) is composed of the products of decomposition of albumen and of alkaline salts. The albuminous substances, fibrin and albumen represent the nourishing properties of meat, while the salts, possessing likewise nourishing qualities, are important for the promotion of digestion. About twenty years have elapsed since Liebig made his first investigations on the constituents of meat. It was then also that he advanced his views concerning the nourishing properties of the extract of meat, and we find in the "Chemische Briefe," published shortly afterwards, his ideas set forth so clearly that the unprofessional reader may understand and duly appreciate them.

I feel confident that the value of this extract was and is, even now, over-estimated. Liebig himself abandoned the idea that the organic constituents of the extract were the agents of its beneficial effects, and experiments, made some years ago in England, show plainly that the ashes of the extract are capable of producing the same effects as the extract itself. Even now, however, after the explosion of the theories that albuminous substances might be built up again from the products of their decomposition, experiments are constantly made to find or-

ganic constituents capable of producing the effects of the extract itself, as is evidenced by the recent discovery of carnine, the physiological effect of which is, according to the experiments, more than doubtful. Liebig states that "the extract, which is produced by extracting meat by cold water, is the nourishment for the muscle;" but the meat liquor is not only the agent of transmitting the nourishment from the blood to the muscles, it also contains the waste products formed during the action of the muscles. Liebig in preparing his extract, however, excludes the real nourishment by coagulating it and carefully collects the products of decomposition for the good of humanity.

But, if the alkalies alone constitute the value of this extract, is there not a waste of most valuable material? The interest of the manufacturer will not be disputed, but why does the intelligent consumer pay dollars for that which he might buy for a few cents?

The fact is, that the public is as yet in the dark; the published experiments are known in most cases only to scientific men and command attention, while the want of support by illustrious names makes them soon forgotten. For the proper utilization of meat, the albuminous as well as the extractive portion must be preserved, for the former not only re-supplies the body with albumen, which had become decomposed by the action of the muscles, but serves also as a combustible, while the extractive portion is necessary for a proper digestion. Let us see how these requirements are fulfilled by the methods in vogue for the utilization and preservation of meat.

When meat is salted, it is treated with an excess of salts (common salt and saltpetre), which absorb the water, forming a concentrated solution, which contains besides these salts much of the extractive portion of the meat. This solution is removed before using the meat, and the latter is even soaked in fresh water for some time, to remove the excess of salts. It is evident that such meat is very poor in extractive salts, and for this reason very difficult to digest.

The action of smoke depends upon the carbolic or cresylic acid contained therein. These substances coagulate the albumen and fibrin, and thus prevent decomposition. Smoked meat is therefore not so easily digested as raw beef, since not only the gastric juice must remove the carbolic acid before digestion is possible, but the albumen and fibrin, being already coagulated, will resist more strongly the dissolving action of the juice. The conditions will be even more unfavorable for a proper digestion, if the salting and smoking process have been combined.

One of the most rational processes of modern invention is the preservation of meat by enclosing it in air-tight cans. This process would undoubtedly give full satisfaction, if it were not for mechanical difficulties, which cannot as yet be surmounted. If properly carried out, however, it is the best process known, because it furnishes the meat in its pure and unadulterated state, the great agent of decomposition, atmospheric air, being excluded.

When we come to consider the different agents of decomposition, we find that they are, first the atmospheric air with its myriad germs and spores, and secondly water. No decomposition is possible without the latter, and I propose therefore the following method of preservation. The meat, after having been cut in slices, should be dried in a hot air-chamber, at a temperature below 140° Fah. If the apparatus is well constructed, the drying may be completed within three hours, if filtered air be drawn rapidly through the chamber.

In this operation the meat becomes quite hard, and can easily be ground in a mill. It is then in the condition which is best adapted for use. The fibrin and albumen not being coagulated, are able to take up water and the fibres expand into their natural state.

The powder is of a slight brownish yellow color; has a trifling odor of roast meat, and keeps exceedingly well. This proves that the salts contained in the meat are entirely sufficient for its preservation, if the quantity of water keeping them in solution is greatly diminished by evaporation.

Its use is easily understood. For beef soup—two ounces of the powder are boiled for a few minutes with one pint of water and the other usual ingredients. The soup thus prepared will be stronger than that prepared from half a pound of fresh meat, for a solid piece, even after long boiling will never permit as thorough extracting as the meat powder.

For solid roast meat dishes, the addition of one egg to a pound of meat powder, together with the requisite quantity of water, suffices to reunite the separated fibres by means of the coagulating egg-albumen.

The fact that the albumen and fibrin are not coagulated, makes it a valuable medicine for consumptives, and in all cases of debility where good nourishment is requisite. It is even more easily digested than raw meat, for the reason that, if it is taken with cold or lukewarm water, the process of swelling will take place in the stomach, where being surrounded by gastric juice, the latter is absorbed.

This I have tested by actual experiment. Corresponding quantities of raw meat and meat powder were digested in glass flasks, under the influence of equal quantities of diluted muriatic acid and pepsin at a temperature of about 110° Fah. While the contents of the vessel containing the meat powder, after six hours' treatment, represented a uniform, though not quite clear fluid, the vessel containing the raw beef contained yet pieces of the undigested material. A dog was fed for eight days with a daily ration of five ounces of meat powder, corresponding to about one pound of fresh meat. The average weight of the discharges from the rectum was about one-fourth ounce daily (dried at 200° Fah.), the maximum being 8·5 grms., the minimum 5·2 grms. Microscopical examination did not show even traces of undigested meat fibre. The only part of the meat found undigested were the relics of the sinews. Pieces of wood, cork, paper and threads of the carpets formed, besides the mucous membranes and constituents of the bile, the solid part of the excrements. The dog, who had formerly been fed on mixed food, grew very lively during this treatment. His weight at the end of the treatment was 12½ pounds.

As no apparatus in which the temperature could be regulated during the drying of the meat existed, I have been obliged to construct one according to my own ideas.

This apparatus is so constructed, that the air is sucked through it by an exhauster moved by steam power. Two valves, one for hot air, the other for cold air, the air being filtered in both cases through cotton, and both acting under the equal outside pressure, supply the apparatus with pure dry air of a certain temperature, which is regulated by the aid of a thermometer. An apparatus of this kind is in operation at my laboratory.

The drying room of this apparatus measures 27 cubic feet. The air is heated by steam pipes carrying 60 lbs. pressure, and having 27 square feet heating surface. The exhauster is an inverted quadruple Fan blower of the Rahway Manufacturing Company, of Rahway, N.J., and removes by 420 revolutions, 25 cubic feet of air per minute.

By increasing the heating surface and using a larger exhauster, the apparatus may be made more effective yet, so that 100 lbs. of beef can be easily dried within three or four hours.

Chemical Laboratory, 128 *Worth St., New York.*

—*Amer. Chemist, Jan.*, 1872.

ON THE ACTION OF HEAT UPON SOLUTIONS OF HYDRATED SALTS.*

By C. R. Tichborne, F. C. S.

The author used for the examination of the dissociation of water of hydration, such salts as presented a change of color when passing from the hydrated to the anhydrous state. He had experimented upon those of cobalt, copper and nickel. Thus, to take the familiar instance of cobalt, the anhydrous salts of which are blue, whilst the hydrated are pink, no amount of boiling will convert a pink solution of cobalt into a blue one, except it is extremely concentrated, but in every case such salts were all changed into the anhydrous condition on boiling under pressure. When the "thermanalytic" point, as the author called it, was reached, the pink cobalt salts were converted into the blue ones, copper into yellowish-brown, and, in the case of chloride, nearly a black solution. Some caution is required in the performance of these experiments owing to the danger of an explosion. An important observation made in connection with these experiments was the fact that dilution acted differently in the cases of chromatic change produced by dehydration and those producing basic results. It is exactly the reverse. The author had pointed out in a previous report that chromatic changes resulting from the formation of basic salts by dissociation (*i. e.* chromic or ferric salts) is influenced by dilution lowering the thermanalytic point, or the increase in volume of water will assist the dissociation. But in the second class the increase in the volume of water ruins the thermanalytic point and retards the dissociation.

Prof. Sullivan complimented the author upon the importance of this investigation, and this line of research generally.—*Chem. News, Jan.* 19, 1872.

ANOMALOUS PRODUCTION OF OZONE.

By Henry H. Croft.

Professor of Chemistry, University College, Toronto.

About six years ago, when evaporating some syrupy Iodic Acid, prepared according to Millon's process, over sulphuric acid, I noticed that when the acid began to crystallise, the air in the jar (covering

* Abstract of a paper read before the Royal Irish Academy, Jan. 8, 1872.

the drying dish) had a strong smell of ozone, or active oxygen. A couple of years afterwards, on again making iodic acid, this observation recurred to my mind, and I carefully tested the air in the jar during the evaporation; no trace of ozone could be detected until the acid began to crystallize, when the smell of ozone became immediately perceptible, and all the usual tests for that body succeeded perfectly.

During the last month I have had occasion to convert two ounces of iodine into iodic acid, and exactly the same result has been observed. The acid usually solidifies to opaque verrucose masses; but, on this occasion, the crystals formed were clear and brilliant. The solution had in this, as in all the former cases, been boiled down to thin syrup, so that no trace of chlorine, or nitric acid, could possibly have remained to act on the ozone paper. The air in the jar was tested from day to day, both by the smell, and the action of iodized starch paper. Even when a few crystals began to form no change was noticed, but when the crystallization set in fully the evolution of ozone was most remarkable, the strong smell being quite characteristic, entirely different from that of chlorine or nitric acid.

I am quite unable to account for this ozonification of the air (or oxygen) over crystallizing iodic acid. My friend, Mr. Sterry Hunt, has suggested that it may arise from a partial deoxidation similar to that which produced ozone when hypermanganates are decomposed, as observed by him and other chemists. As the crystallizing acid remains perfectly white, either opaque or transparent, and as the lower oxides of iodine are of a yellow, or even brown color, according to Millon, I cannot accept this explanation, and even if it were true, the phenomenon would be equally unintelligible—a reduction taking place during crystallization. I can offer no explanation of the *simple fact* that air over crystallizing pure iodic acid, becomes ozonized, but I think that the observation seems to offer a wide field for further experiments, which I have unfortunately not the time to carry out.—*Canadian Pharm Journ., Jan.*, 1872.

Pharmaceutical Colleges and Associations.

Philadelphia College of Pharmacy.—The annual commencement will take place on the evening of March 15th, at the Academy of Music; the valedictory will be delivered by Professor Maisch.

The Board of Trustees have resolved to assist the local committee of the American Medical Association, which will meet in this city on May 7th next, in their endeavor to get up an exhibition of objects of interest to the medical profession. The committee of the College desire for this purpose mainly specimens of new or rare drugs, medicinal chemicals and pharmaceutical preparations; nostrums or secret preparations will not be accepted. Offers of suitable articles are solicited for this exhibition during the month of March or early

in April. The committee consists of James T. Shinn, *Chairman*, J. M. Maisch, Charles Bullock, Dr. W. H. Pile, Edward Parrish, M. L. Rosengarten and Joseph P. Remington

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The New York College of Pharmacy will have its commencement in Association Hall, corner of Fourth avenue and 23d street, on Tuesday, March 19. Professor Chandler will deliver the valedictory address.

The Pharmaceutical Society of Great Britain held a pharmaceutical meeting on February 7th. Among the donations to the Museum was a specimen of chloral hydrate, a few ounces of which had been kept in a half gallon jar; from this small quantity there had grown out about twenty or thirty spear-like crystals, five or six inches in length, a phenomenon which has not been satisfactorily explained.*

Mr. Greenish read a "Note on Tincture of Cinnamon," which elicited the following interesting discussion, which we take from the Pharmaceutical Journal and Transactions, February 10th:

The President inquired, in reference to Mr. Greenish's statement that with a strong spirituous preparation the decomposition of tincture of cinnamon would not be likely to occur, how long it was since the author made the preparation of tincture of cinnamon upon which he based his observations?

Mr. Greenish: I think quite two years.

The President said that was a considerable time; and if the preparation would keep two years, that was perhaps as long as could be expected. Not only did he agree with Mr. Greenish and Mr. Giles that the different strengths of spirit might be used with advantage for different tinctures, but he also thought that sometimes a different mode of applying the spirit and preparing the ingredients might be used with advantage. He might mention especially the tincture of calumba. Calumba was one of those roots which was with great difficulty exhausted, and it was also one that absorbed a large amount of the menstruum, of which there was a considerable loss in making the tincture. He had found (and he believed this method was approved by Professor Redwood) that it was better to slice the calumba than to powder it. But still he found that there was a difficulty in slicing it equally, and that with an ordinary root cutter the substance would break off, and some pieces would be lump and thicker than they ought to be. Hence he had taken a portion of the distilled water which he should have used in making the proof spirit, and placed some of it over the calumba—the whole uncut root—and allowed it to remain for twelve hours. There was just sufficient water to cover the calumba, and the next morning he found that the substance was in a nice condition for slicing with the cutter,—neither too soft nor too hard. He found, also, that when the calumba was in that condition, the loss was considerably less upon the gallon of tincture than it was when either powdered or ordinary sliced calumba was employed. He believed that some process of that kind might be applied to other tinctures. Tincture of orange-peel was one upon which there was a great loss of menstruum; and he believed an improvement might be made in its preparation. He was not prepared at present to state exactly what the improvement should be, but he believed that the liquid might be applied to the orange-peel in a better way. He should be glad to hear remarks on the subject.

Professor Redwood said that he was sure the members were much indebted to Mr. Greenish for bringing forward this subject, and he (Prof. Redwood) should be glad if gentlemen, who, like the President and Mr. Greenish, were

* In the slow crystallization of chloral hydrate from bisulphide of carbon prismatic needles of such a length are readily obtained. *Editor Amer. Journ. Pharm.*

constantly and largely engaged in the preparation of this and similar medicines ordered in the Pharmacopœia, would give the Society a little more in detail the result of their experiences and observations. It had struck him (Professor Redwood) that there were two points in connection with the subject which it was very important to keep separately before the mind. One was the occurrence of decomposition, and the other was the evidence of a decomposition. It seemed to him that all the inferences which had been formed with reference to the tinctures that had just been brought under their notice were inferences founded simply upon the obvious appearances which the tinctures presented to the eye; and in cases in which there had been some alteration or variation in the mode of operating, such as an alteration in the strength of the menstruum or spirit, it seemed to have been inferred, because there was no evidence to our senses of decomposition, that no decomposition had taken place. He thought that that was too violent an assumption. He was not at all clear that in cases where, in consequence of the use of a stronger spirit, there had been no deposition of insoluble matter, there had been no decomposition. The decomposition might have taken place, though the deposit had not been formed. That was a point upon which they required proof one way or the other. It was quite possible that the spirit had held in solution the product of decomposition which, if a weaker spirit had been used, would have given a muddy appearance to the tincture. If that were so, then there naturally arose another question,—Was there in such a case, or would there be, an advantage in the substitution of the stronger spirit for the weaker? He should be inclined to say, No. He would rather continue the use of the weaker spirit, and for this simple reason, that they wanted the tincture to be used in a definite condition. It might be a tincture which would not keep for more than a certain limited period; and if that were so, it ought to be used within that period, and not used beyond it. If it became muddy when the decomposition took place, that would preclude its use; but if by the use of a different menstruum—a stronger spirit—that muddy character was prevented, then there was an inducement to go on using the tincture when it was in an unfit state. In fact, it appeared to him that the case was somewhat analogous to that of oil of bitter almonds. Oil of bitter almonds in the purified state, freed from hydrocyanic acid, underwent a speedy oxidation. He would not say that this oxidation always occurred, for Dr. Tilden had shown them that if the oil were anhydrous, it might be kept without rapid oxidation; but in its ordinary state, when purified from hydrocyanic acid it would oxidize quickly, and pass into the state of benzoic acid, which would crystallize in it; and, in place of the fluid oil, there would be a mass of crystals nearly filling the bottle, and they would at once indicate that there had occurred such a change as would preclude the use of the oil, or at least of the altered part of it. If, on the other hand, they had essence of bitter almonds instead of oil,—that is to say, if they had dissolved the oil previously in a certain quantity of spirit,—there was no longer such an indication as that. There would be no deposition of crystalline matter, because there was present a menstruum (the spirit) which, as the benzoic acid formed, dissolved it. That seemed to him to be a somewhat analogous case to what possibly occurred in tincture of cinnamon. It was most desirable that there should be some experiments to indicate whether decomposition took place when external evidences of it were absent.

Mr. Greenish said that the cinnamon had absolutely gone out of the two preparations he had mentioned, or scarcely a trace of it was left, and, therefore, in the decomposition the cinnamon was evidently decomposed, and there was a very copious precipitate. When made with the stronger spirit, the compound tincture of cinnamon and the simple tincture had each a strong smell of cinnamon after having been kept for about two years. In every Pharmacopœia which he had consulted on the subject, except that of the United States, a stronger spirit was used—either six of spirit to two of water, or rectified spirit.

The President asked Professor Redwood what method he would propose to be adopted for ascertaining at what time chemical change commenced in tincture of cinnamon, and to what extent?

Professor Redwood said Mr. Greenish had just referred to one evidence which certainly went to show that the tincture made with the strong spirit had retained the cinnamon oil longer than the other, for the flavor of cinnamon still remained. What they would have to look for would undoubtedly be oil of cinnamon in the one case, and cinnamic acid in the other. As the oil of cinnamon disappeard, the cinnamic acid would be produced. But it was not easy to judge of the proportion of an essential oil in a strong solution of it, by the taste or smell He had recently had evidence of this in the investigation of a subject allied to that before the meeting, and which he had intended alluding to in connection with the President's paper submitted to them at the previous meeting. One of the subjects referred to in that paper was syrup of tolu; and it was stated that in making that preparation the tolu did not become completely exhausted of the constituents which gave the peculiar character to the syrup. That was a subject of some importance to the pharmaceutist, and one, moreover, to which he had directed his attention, independently of its being brought forward in the paper. He had been requested to examine a specimen of balsam of tolu for the purpose of ascertaining whether it was genuine or not. He found clearly that it consisted of the resinous matter of the balsam of tolu answering to the reactions which that resin would give, but it was deficient in some of the most important constituents of good balsam of tolu, namely, cinnamic acid and the peculiar oily matter which gave to balsam of tolu much of its peculiar flavor. He concluded that it was balsam of tolu which had been used for making syrup, or for some similar purpose. In compliance with a suggestion made by Mr. Hanbury, he had used some of this partially-exhausted balsam for making syrup of tolu according to the Pharmacopœia, and compared the product with some syrup made with perfectly good and genuine balsam. Now, taking the syrups in the form in which he had produced them, he did not find it very easy to distinguish the one from the other; but if half an ounce of each of those syrups were put into a bottle and diluted with eight or ten times its volume of water, there would be no difficulty in distinguishing between them,—one solution being poor and vapid compared with the other He should test the tinctures in a somewhat similar way. In examining the balsams, of course he should go to the quantitative determination of the proportions of cinnamic acid in them, as there appeared a probability that exhausted balsam of tolu might find its way into commerce. It was quite clear that something more was required than was at present given in the Pharmacopœia for the purpose of indicating what balsam of tolu ought to be. In the first volume of the Pharmaceutical Journal, Professor Soubeiran, of Paris, reported the results of experiments he had made in consequence of a statement that the same balsam of tolu might be used two or three times for making syrup without any deterioration in the quality of the product. Soubeiran came to the conclusion that, taking account of the proportion of balsam of tolu which was ordered, it could be used twice without deterioration in the product, but not more than twice. The proportion then ordered in the Paris Codex was one part of balsam to four parts of water It was evident from the experiments of Soubeiran that a smaller proportion would yield a syrup equally good, and the proportion in the Paris Codex has therefore been altered to one part of balsam to ten of water. The proportion prescribed in the British Pharmacopœia is even less, being one to about thirteen, while in Russia the proportion remains at one to four. Having reference to the quality of this syrup, we could neither diminish the proportion of balsam ordered in our Pharmacopœia nor use exhausted balsam without injury to the product. There was a vast difference between syrup of tolu prepared according to the Pharmacopœia, and that which had been occasionally recommended, which was produced by putting tincture of tolu into ordinary syrup. Syrup of tolu, made according to the Pharmacopœia, was one of the most elegant, agreeable and successful of our officinal syrups. It contained a considerable quantity of cinnamic acid, while it derived the flavor of the balsam from the oily and resinous matter. On every ground it was important to maintain the character

of that syrup, and in doing so those who made it must take care that they were not imposed upon with exhausted balsam.

Mr. Mackay said that he would refer to the analogy which Prof. Redwood had stated existed between tincture of cinnamon, when kept for a considerable time, and the remarkable change which took place in the oil of bitter almonds when freed from prussic acid and diluted with spirit. Some years ago a quantity of essential oil of bitter almonds was accidentally sent out in small bottles by a celebrated house in England and distributed throughout the length and breadth of the country under the name of "essence of bitter almonds," and a portion of the oil so labelled came into his neighborhood and fell into the hands of an inquisitive servant girl, who swallowed fully a teaspoonful, the result being, he need scarcely add, fatal. The public mind then became very much alarmed about the use of the essence of bitter almonds in any shape, and the consequence was that a great many persons who had been engaged previously in the manufacture of essence of bitter almonds, determined to make their preparation free from prussic acid. He was amongst the number who determined to do so, and distilled very large quantities of the oil in the usual way over potash and lime, in which process, as a matter of course, he was successful in removing the prussic acid; but the effect when this oil was diluted with spirit was very much what Prof. Redwood had described: there was a considerable quantity of benzoic acid formed, more especially if the bottle happened to be exposed to the sunlight. But then came the peculiarity which he wished to notice, namely, that though there was a deposition sufficiently great to line the interior of the bottle with benzoic acid, there was not an absence of flavor. There was so much of the peculiar flavor of bitter almonds left that the compound was used freely for domestic purposes, and in the only cases in which parties refused to use it, the refusal was due more to the unsightly appearance of the liquid than to the positive absence of flavor.

After some further remarks upon the preservative influence of alcohol upon organic matters, the following papers were read and discussed: "The Madagascar Cardamom or Longouze," by Mr. Daniel Hanbury; "The Separation and Quantitative Determination of the Different Cinchóna Alkaloids" and "Samadera Indica," by Dr. J. E. De Vrij. The bark of this tree, and particularly the kernel of the fruit, contain a crystallizable bitter principle, samaderin, discovered in 1857 by Van Tonningen, which gives, with concentrated sulphuric acid, a beautiful red violet color.

Minutes of the Pharmaceutical Meetings.

A pharmaceutical meeting was held on the afternoon of February 20th, 1872. Dr. Pile presided and William McIntyre, in the absence of the Registrar, was appointed Registrar *pro tem.* The minutes of the last meeting were read and approved.

Professor Rogers, of the University of Pennsylvania, at Philadelphia, was introduced to the meeting.

A copy of the latest edition of the Danish Pharmacopœia, published in 1869, in the Latin language, was presented from Mr. H. M. Wilder.

Professor Parrish exhibited annatto seed from Para, which are said to be used for obtaining a finer tint of color than that which is produced by annatto.

Professor Maisch exhibited specimens of syrup of senega and syrup of ipecac, prepared by Mr. J. B. Moore from his formulas (published in "American

Journal of Pharmacy," March, May and July, 1870), which had been kept for over 16 months; also syrup of orange flowers, prepared of double the strength of the officinal syrup; also, from George W. Kennedy, of Pottsville, Pennsylvania, mistura cretæ, having the sugar replaced by glycerin, and kept for 10 months. Mucilage of gum Arabic was also exhibited by the Professor, made by him in 1870, in which half the water was replaced by glycerin (see Mr. Rother's paper, on page 113 of the present number.) This mucilage had been made for certain investigations which have not been finished.

Professor Parrish exhibited to the meeting camphor in the state of powder, prepared by Mr. C. H. Heinitsh, last October, by sublimation, as proposed by Mr. Lowd. It was still in a pulverulent condition, and consisted of very minute crystals.

Professor Procter presented a specimen of the oil of the liver of the sun fish, prepared by Mr. Marvin (manufacturer of cod-liver oil), at Portsmouth, N. H. This oil has a bright orange-yellow color, an odor differing from cod-liver oil, and was prepared in the same manner as cod-liver oil. Nothing is known of its medicinal properties. This fish is the *Tetraodon mola*, a species of ostracion described in the 10th volume of Cuvier's work (Pisces).

Professor Procter now exhibited some specimens of organic principles, made by Prof. E. S. Wayne, of Cincinnati. These were hydrastin, from *Hydrastis Canadensis;* sulphate of berberina, from the same plant; marrubin, the bitter principle of horehound; phloridzin, from apple tree bark; xanthoxylin, from the bark of *Xanthoxylum fraxineum*, and celastrin, from *Celastrus scandens*. The two last Mr. Wayne claims to have discovered. They are both neutral principles. Xanthoxylin from this plant was described by Dr. Edward Staples in the 1st volume of the "American Journal of Pharmacy," page 163, 1829, which Mr. Wayne has overlooked. The celastrin, which now for the first time is noticed, is in perfectly white crystalline masses of minute crystals like chloral hydrate. We are not aware of its properties or characteristics, but these will be noticed in an article to be prepared by Prof. Wayne.

Professor Maisch exhibited cinnamic acid and styracin of various degrees of purity, obtained from liquid storax. Styracin may be readily obtained in tufts of snow-white needles, by crystallizing it from petroleum benzine. He likewise showed some bibromide of camphor, $C_{20}\,H_{16}\,O_2\,Br_2$, discovered by Laurent in 1840, and monobromated camphor. $C_{20}\,H_{15}\,Br\,O_2$, discovered by Swartz in 1862, and lately recommended by Prof. Deneffe as a sedative for the nervous system. (See Amer. Journ. Pharm. 1872, p. 84). In attempting to make this new therapeutic agent on a somewhat larger scale, an explosion took place while the closed vessel was kept in boiling water, in consequence of the pressure exerted by the confined vapors of hydrobromic acid, uncombined bromine and camphor. Suitable precautions having been taken in anticipation of such a possibility, no injury was sustained. The monobromized camphor resembles Borneo camphor in odor.

Professor Bridges said it afforded him much pleasure to call the attention of the meeting to a new industry in this country—the manufacture of phosphorus, by Messrs. Rose and Lowell, of Rancocas, Burlington County, New Jersey. The bottle on the table, marked Jan., 1872, is believed to contain the first stick

of phosphorus cast in America, and presented a handsome appearance. Dr. Pile remarked that Mr. Rose had informed him in conversation that it was made from spent bone black from the sugar refineries, and pays a profit at the market rates. The manufacturers are already able to supply it in large quantities.

Professor Rogers was called upon to make a few remarks about the recent investigation in regard to the sale of medical and other diplomas. The Doctor suggested that the meeting would be interested to first hear something in regard to the recent veto of the Pharmaceutical Bill by the Governor. He eulogized the bill as a wise and just measure, and expressed his wonder and astonishment at the veto.

Professor Parrish rehearsed the history of the bill in detail, from its origin. It was prepared by a committee in consequence of the demands made by the public press, and passed upon by the druggists of Philadelphia met in convention, adopted by both houses of the Legislature, and now vetoed by the Governor, who, from the objections as reported in the papers, must have been much deceived in the character and effect of the bill. The objections were commented upon, and in conclusion Prof. Parrish asserted that we much need the protection of such a law to give character and standing to our profession. The public need it for their protection.

Dr. Rogers said that for one his heart was deeply interested in our profession, and that we are emphatically on the same platform with the physician: without skilfully prepared remedies the physician's art would be, indeed, very much crippled. Physicians should stand by the pharmacists, and demand the passage of this bill. We need competent persons to dispense our prescriptions, and are well assured that accidents rarely happen with the educated pharmacist.

Prof. Rogers further dwelt upon the outrageous frauds recently discovered in the sale of medical diplomas. This trade has been going on for some time, and only recently the profession and public have found it out. The parties have been until now adroit enough to cover their tracks, but occasional correspondence has brought it to light. Without the participation of the faculty, the press took it up and forced it upon the attention of the Legislature. A committee of investigation has been appointed, and the faculty of the University of Pennsylvania were summoned to testify before it.

The investigation threatening the culprits, they have not attempted to defend their case, but attempted a flank movement and attack upon the University of Pennsylvania.

The Doctor explained the careful mode of printing diplomas, and the impossibility of their falling into the hands of those who would make fraudulent use of them. The charge of their over-issue was a mere invention, entirely unsupported by evidence.

Those fraudulent medical schools—the Philadelphia University of Medicine and Surgery (Paine's), the American University of Philadelphia and the Eclectic Medical College (Buchanan's)—pretend to have competent rules for governing them; but it was proved that they had not lived up to them in any particular. He hoped for legislative action to relieve the public from this

imposition, practiced not only in this country but over Europe. The name University of Philadelphia is frequently confounded with University of Pennsylvania (*at* Philadelphia), and favors the system of deception complained of.

Professor Bridges remarked that in Europe, where medical practitioners were licensed, many had applied, having these diplomas, who had never been out of their own country.

A discussion took place in regard to political considerations influencing the working of the bill, and the pharmaceutical board to be appointed under its provisions, it being known that some even went so far as to attempt influencing members of the College in reference to nominations before the bill was a law.

It was urged that the main purpose should be to get the bill passed, and then guard against abuses. It was thought that the Governor had not properly investigated the bill.

A copy of the general bill spoken of was now read by Dr. Lynch. It proves to be a copy of the objectionable New York law, adapted to an entire State. It was shown that the members of State Legislatures, not residents of large cities, had mostly been opposed to general pharmaceutical laws; and, for this reason, the idea of obtaining such a law had been abandoned in most States, efforts being now made to secure the enactment of special laws, with the full expectation that their beneficial influence would in a short time extend to other localities.

The unjust provisions of the proposed general law were fully criticized, and the hope was expressed that, since the Senate had indefinitely postponed it, it would never again be called up in that body.

After some suggestions looking towards a meeting of druggists and pharmacists to take proper action in this matter, the meeting adjourned.

WILLIAM MCINTYRE, *Registrar pro tem.*

Editorial Department.

THE PHILADELPHIA PHARMACY BILL, which we informed our readers, in February, had been introduced in both houses of the Legislature of Pennsylvania, passed, after some opposition in the Senate, with large majorities, and was laid before Governor Geary for approval. On the 20th of February the Philadelphia morning papers contained the following telegram from Harrisburg:

Governor Geary to-night sent to the House his veto of the Philadelphia Drug bill, as prepared by the Pharmaceutical Board. His objections in substance are—that, first, it is a special law for Philadelphia instead of a general law for the State, as it ought to be. New York and New Jersey both have general laws. Second. The bill impresses the Governor with the conviction that it is designed for the special benefit of the Philadelphia College of Pharmacy; and it seems to assume that the graduates of no other medical school have the necessary knowledge to compound or sell drugs. This discrimination appears invidious. The fees in each case are ten dollars, instead of five, as in New York. There is nothing in the bill to prevent interference with practitioners of medicine, who do not keep a pharmacy or store for retailing medicines.

Supposing that this account represents the veto message correctly, we must say the Governor was probably never before misinformed on any subject to a greater extent than in this instance, all the *facts* stated therein being erroneous. However desirable it may be to have the provisions of such a law extend over the entire State, it is nevertheless true, that in *all* the States, with the single exception of Rhode Island, wherever such a general law had been introduced, it was defeated. We must remember that in thinly settled districts, where frequently for many miles no drug store can be found, physicians are compelled to dispense medicines and carry them in suitable forms in their saddle-bags, while the sale of popular remedies is usually in the hands of country storekeepers who make no pretensions as to any acquaintance with drugs and their preparations. Hence the necessity which exists in the larger cities to confine the practice of pharmacy to pharmacists alone is not felt there, and the opposition to *general* laws came, in most cases, only from the representatives of such districts. In most of the States the idea of a general law was soon abandoned, and the efforts confined to the securing of local laws, with the expectation that their provisions would gradually extend to other localities. In 1871 the proposed laws were defeated in the States of New Hampshire, Massachusetts, New Jersey, Ohio, Michigan and Illinois; even the only attempt at a general law for Pennsylvania, introduced by Mr. Harry White into the Senate, January 21st, 1868, was reported with a negative recommendation three days afterwards, and did not pass. Besides the Georgia law of 1848, which is a dead letter, and the Rhode Island law of 1870, modified in 1871, only the following local laws referring to the practice of pharmacy are now in force within the United States: Baltimore, Md., 1870, and New York City, 1871; but bills are pending now before the Legislatures of several States.

That the vetoed bill should be for the special benefit of the Philadelphia College of Pharmacy is nowhere apparent. By its provisions, that institution had merely to *nominate ten persons out of the most skilled and competent pharmacists of the City of Philadelphia* (the nominations were not to be confined to members of the College), out of which number the *Mayor was to appoint* the Pharmaceutical Examining Board, consisting of three nominees. By none of its acts did the College ever pretend that it alone represented all the skill and competency among the pharmacists of Philadelphia, and the reliable and competent pharmacists not affiliated with it would most assuredly have received the same consideration as any one of its members, or rather the nominations would doubtless have been made with the sole regard to effect the greatest possible benefit for the public.

Governor Geary sadly misunderstands the character of *medical* colleges, none of which claims, that we are aware of, that its graduates in medicine are as such also skilled and competent pharmacists; least of all is this the case with the faculty of the *honorable* medical colleges of this city. Regarding graduates in pharmacy, the vetoed law placed on the same footing the diploma or certificate from the Philadelphia College of Pharmacy or *from any other college or school of pharmacy* whose diploma or certificate is based upon a regular term of service in the drug and apothecary business. There was, therefore, no invidious distinction.

The Governor is unaccountably misinformed when he states that the fee in New York for examination and certificate is only five dollars. All our readers know that it is *thirty dollars* for proprietors and *ten dollars* for prescription clerks. As originally proposed by the committee, the fee was fixed at five dollars, but by the meeting of druggists and pharmacists held Dec. 19th, 1871, it was raised so as not to exceed ten dollars, which was considered a more just and proper compensation for the necessary time and labor of the Board.

The last clause of the veto message is obscure. We suppose its meaning to be that practitioners of medicine should not be prevented from furnishing medicines to their own patients. Aside from the question whether or not such a course on the part of physicians in a densely populated city like Philadelphia is desirable or not, there is nothing in the vetoed bill to prevent physicians from drugging their own patients with their own medicines to their heart's content; for section 1 of the vetoed bill refers only to persons who open or carry on a *retail drug or chemical store*, or engage in the *business* of compounding and dispensing medicines, or of *selling at retail* any drugs, chemicals, poisons or medicines.

We have heard it intimated that the officiousness of some parties, in trying to secure their own nomination before the bill had even passed the Legislature, is one of the causes why its former friends in that body are disposed to give it the cold shoulder. We should be sorry if this would prove to be the case; for we are convinced, that by far the largest number of, if not all the members of this College, are determined to make only such nominations which will reflect no discredit upon this institution, and solely with regard to *fitness* for the responsible position.

What the ultimate fate of this vetoed bill will be we cannot predict. If it does not become a law the citizens of Philadelphia cannot attribute the result to any action on the part of the pharmacists; they have done their duty, and voluntarily proposed to take upon themselves obligations in order to protect the public, and to assume responsibilities which no law heretofore enacted in this country had imposed upon them. We have shown that the objections raised by the Chief Executive Officer of the Commonwealth are invalid, and we can leave the subject to the just discrimination of all concerned.

A Model Pharmacy Act was introduced by Mr. White in the Senate of Pennsylvania, January 26th. It proves the danger of objectionable legislation, and is therefore of interest far beyond the limits of this State. The bill, by a decided majority, has been indefinitely postponed, but there is no telling when it may be called up again, and "to be forewarned is to be forearmed."

The bill in question is a verbal copy of the Irving bill, which was saddled upon the pharmacists of New York City nearly a year ago, and altered merely to apply to an entire State. The originators of that law and the commissioners acting under it may congratulate themselves on the excellent example set by them on the subject of regulating the practice of pharmacy in an intelligent community.

No. 129 of the file of the Senate is "An act to establish a board for the examination of and licensing of druggists and venders of medicine in the State

of Pennsylvania." It provides for a board, to be appointed by the Governor for three years, consisting of two skilled physicians and one (unskilled ?) druggist. This board is to examine and license all *druggists and clerks* for a fee of *thirty dollars* each, to be appropriated as a compensation for the services of said board, the *balance, if any*, to be paid into the State Treasury. There being no provision as to the place where the forunate three or a majority thereof shall meet, of course the pharmacists residing on the Delaware may be required to apply for examination on the Monongahela River or Lake Erie, and *vice versa*. No provision is made for any redress against the decisions of this august board. The members are irresponsible for three years, and pocket $30 from every "vender of medicines," and every unfortunate person who may be "employed as clerk by any druggist, keeper, proprietor or superintendent of any drug store in the State."

We recommend this bill to the careful consideration, not only of those who, at its passage, may be engaged as "druggists, venders of medicines," &c., but also to those who may be in need of a fat office. Verily, the New York law is an innocent babe compared with this one, which we are informed was concocted in Philadelphia, and, as stated before, very properly postponed indefinitely by the Senate.

The Bogus Diploma Business, which has been carried on in the city of Philadelphia for a number of years past, has at last attracted the attention of the Legislature, and the Senate has appointed a committee to investigate the matter. Several meetings have been held, and very curious facts have been elicited. A Dr. Bissell declined to answer the question, whether he knew anything about the sale of diplomas, because it might criminate himself. Mr. Jos. B. Reed, reporter of the "Age," testified that Dr. Buchanan, of the Eclectic Medical College, offered him a diploma for $25. Mr. C. S. Bates obtained his diploma from the same college after six months' study; he kills small-pox with sweet spirits of nitre and cold water, has a right to do as he pleases with his own patients, and doctored several years before he got his diploma. Dan. Parlow, colored, an herb doctor, received, as a mark of honor, a diploma from Dr. Buchanan through Dr. Bissell. A W. H. Hacks, colored, attended two courses, of about six lectures each, at the American University of Philadelphia, and obtained a diploma for $25. Jonathan Davis, colored, received his diploma from the same institution, for $30, after attending one course of (six ?) lectures. Dr. Dan. M. Fleming received an honorary degree from the Philadelphia University of Medicine and Surgery for $30. Dr. Harbison told Dr. Hylton that he could get Paine's diplomas (Philadelphia University of Medicine and Surgery) to sell to any one who wished to buy them.

The above comprises only a very small portion of the testimony before the Senate committee, the investigation not being concluded.

Explosions in Chemical Manipulations.—At the meeting of the Imperial Academy of Sciences at Vienna, held January 4th last, Professor Dr. F. C. Schneider communicated his experiments made with the view to obtain iodine compounds of a composition analogous to hypochlorites, chlorites and hypochlo-

rates, and briefly described the process in Anzeiger d. Kais. Akad. d. Wiss. No. 1. Mercury oxy-iodide was treated with a solution of iodine in potassium iodide; after two weeks the excess of the oxy-iodide was covered with a crystalline crust which dissolved neither in water nor in aqueous hydriodic acid. On attempting to break the crust with a glass rod, a violent explosion took place shattering not only the vessel, but also the test bottles standing upon the same table. Professor Schneider was seriously wounded in the face and particularly about the eyes, but is doing well and expects to soon investigate the nature of this dangerous compound. Cyanogen and ammonia were absent, so that the explosion could not have been due to the formation of nitrogen iodide.

Mr. Charles Rice, of New York, was badly burned on the left side of the face and on the left hand, by the bursting of a sealed tube in which he was preparing some apomorphia, a new therapeutical agent, the tube being heated in an oil bath. We are glad to learn that the sufferer is doing well.

Being requested to prepare some monobromated camphor, we experimented first on a small scale with Swarts' method by heating the requisite quantities of bromine and camphor under pressure to 212° F. The experiment was successful, but the pressure in the vessel had evidently been very considerable, in consequence of the volatile nature of the articles used and of the products of decomposition. In attempting now to make a larger quantity, suitable precautions against a possible explosion were adopted, and not in vain; for an explosion occurred in which nearly the entire charge was lost, but without doing any injury. We are now endeavoring to procure this substitution compound by a less dangerous process.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Jahresbericht über die Fortschritte der Pharmacognosie. Pharmacie und Toxicologie, herausgegeben von Med.-Rath Dr. Wiggers, Prof. in Göttingen und Dr. A. Husemann, Prof. in Chur. Neue Folge. 5 Jahrgang. 1870. Göttingen. Vandenhoeck & Ruprecht's Verlag, 1871.

Annual report on the progress of Pharmacognosy, Pharmacy and Toxicology. 8vo. 636 pages.

The systematic arrangement of the literature of the above mentioned branches of science is the same as adopted in the previous volume. The numerous essays are judiciously condensed, presenting all the important facts and details of the various investigations and observations; and frequent references to the same subjects investigated in previous years, enhance the value of the work and are calculated to complete the picture of the present status of our scientific knowledge. The following subjects in the volume before us are of particular importance and interest: Inulin, treated upon 9 pages; Sarsaparilla, 7 pages; Cubebs, 9 pages; the fruit of Mezereon, 5 pages; Tampico jalap, 4 pages; Hyoscyamus, 4 pages; Cinchona, 42 pages; Manna, 7 pages; Conium fruit, 6 pages; Aconite, 12 pages; Opium, 21 pages; Mustard, 3 pages; Guarana, 5 pages; Ricinus, 5 pages; fixed oils, 12 pages; volatile oils, 20 pages; alcohols and derivatives, 49 pages; extracts, 9 pages, &c.

This volume, like its twenty-nine forerunners, will be welcomed by all who appreciate the annual sifting and condensation of the extensive pharmaceutical literature throughout the civilized world.

Year-Book of Pharmacy; comprising abstracts of papers relating to Pharmacy, Materia Medica and Chemistry contributed to British and Foreign Journals from July 1, 1870, to June 30, 1871, with the Transactions of the British Pharmaceutical Conference at the eighth annual meeting, held at Edinburgh, August, 1871. London: John Churchill & Sons. 8vo, 657 pages.

The "Year-Book" occupies about 470 pages, while the remaining 187 pages are devoted to the "Transactions," the Constitution, Roll of Members, List of Local Associations, and the General Index. The Year-Book embraces the following chapters: Materia Medica, Pharmaceutical Chemistry, Pharmacy, Notes and Formulæ, Bibliography. In the different chapters, no attempt has been made at any systematic arrangement, except that papers relating to the same subject are noticed one after the other. Under the head of "Pharmacy" an alphabetical enumeration seems to have been intended. Most of the papers are printed entire or in lengthy abstracts, and rarely we meet with a well digested *resumé* of a paper of importance. References are usually made to the journal in which the essays originally appeared, although for most of the readers of the Year-Book the simultaneous quotation of the journals in the English language, they being more accessible, would probably have rendered the work more valuable. We have also noticed the omission of some papers on similar subjects as those selected by the compilers. The occasional reference to the Year Book of 1870 enhances the value of the last issue, although these references might have been more numerous. Considering everything, we must say that this second Year-Book is a vast improvement over the first issue, and the compilers will, with the experience gained in these two years, doubtless produce a still more valuable report next year.

In the part containing the Transactions of the British Pharmaceutical Conference a number of interesting and valuable papers are printed, which were read at the eighth annual meeting, held at Edinburgh.

Proceedings of the American Pharmaceutical Association at the Nineteenth Annual Meeting, held in St. Louis, Mo., September, 1871. *Also the Constitution and Roll of Members.* Philadelphia: Sherman & Co., printers. 1872. 8vo, 720 pages.

This volume contains the minutes, reports and papers of the last meeting, occupying 605 pages, or 100 pages more than the largest volume (1868) ever published by this Association; and, in addition thereto, the general index for the last ten years, occupying 115 pages, which was prepared by Mr. Thos. S. Wiegand. As for some years past, the report on the Progress of Pharmacy, covering 200 pages, is amongst the most prominent features of this annual publication. Mr. Wm. T. Wenzell, the compiler of this report, has adopted in the main the same systematic arrangement which has been used since 1862: instead of merely reprinting the papers or copious extracts of the same, mere abstracts are produced sufficient to cover the results, more particularly all the information which may be considered really new, the original source of these

contributions being faithfully recorded; but references to American or English journals in which these papers were reproduced are in most cases omitted. The reporter reiterates the recommendation made by several of his predecessors, to appoint a permanent reporter, or divide the labor among several members.

The other committee reports are on the drug market, on sophistications and adulterations, on unofficinal formulas, on legislation, and on the exhibition at the meeting.

The papers read at the meeting were about forty in number, many of considerable interest and importance. This number was considered sufficiently large to warrant the adoption of a new arrangement, and accordingly they are classified under three general headings: Pharmacy, Materia Medica and Chemistry. The list of queries to be reported on at the next meeting, which is to be held at Cleveland, is unusually large, and if the investigation of the subjects is not delayed by the acceptors, the interest and scientific as well as practical value of the next volume will be still greater.

The work may be obtained from the Editor, at the price of $4.50 per copy in paper cover, and bound at $5.25. These prices include the postage.

The Industrial Monthly. A practical Journal for Manufacturers, Mechanics, Builders, Inventors, Engineers, Architects; with a record of Railway Progress, 1872. *Vol.* 3. Issued by the Industrial Publication Company, New York. 4to. $1.50 per year.

With the new year, the *Technologist* has changed its dress and adopted the above title. It is a well conducted Journal, full of useful information, and copiously illustrated with excellent engravings.

New York State Inebriate Asylum, Binghampton, N. Y. Annual Report of the Superintendent and Physician for the year 1871.

This report, which was transmitted to the Legislature of New York, shows the condition and gives an account of the management of the asylum, connected with which is the Ollapod club, to which most of the patients belong, and which was formed for literary and social enjoyment. Since the opening of the Asylum, May 1, 1867, 1017 patients were received at the Asylum, and 244 during the past year.

The Mutual Relations of the Medical Profession, its Press, and the Community. By Dr. Horatio Storer, Jr. Boston: James Campbell, publisher. 1872. 8vo, 24 pages.

Reprinted from the "Journal of the Gynæcological Society, of Boston."

Anæsthetics. By Walter Coles, M.D., of St. Louis, Mo. Wheeling: Frew, Hagang & Hall, printers. 1871.

Reprinted from the "Transactions of the Medical Society of the State of West Virginia," June. 1871.

Vivisection. A prize essay. By G. Fleming, Esq., F.R.G.S., &c. Published originally by the Royal Society for the Prevention of Cruelty to Animals. Philadelphia: Women's branch of the Pa. Society for the Prevention of Cruelty to Animals. 1871. 8vo, 64 pages.

The essay is a powerful argument against vivisection, and attempts to prove that it is neither necessary nor justifiable for the purposes of science. In an appendix the author endeavors to disprove the arguments of Dr. Carpenter, one of the judges, against the position taken by him (the author). A further appendix quotes the argument against vivisection made by Professor H. J. Bigelow, M.D., in his address on "Medical Education in America," which we noticed in our last volume.

It appears to us, that many problems are to be solved connected with physiology and other branches of medical science, in the investigation of which vivisection cannot be avoided. See the paper published on page 115 of this number, on the absorption of mercurial ointment, &c.

The half yearly Abstract of the Medical Sciences, being a digest of British and Continental Medicine, and of the Progress of Medicine and the Collateral Sciences. Edited by William Domett Stone, M.D. Vol. LIV. January, 1872. Philadelphia: Henry C. Lea. 8vo. 292 pages.

Braithwaite's Retrospect of Practical Medicine and Surgery. Part LXIV. January. Uniform American Edition. New York: W. A. Townsend. 8vo, 331 pages.

Half yearly Compendium of Medical Science. Part IX. January, 1872. Philadelphia: S. W. Butler, M.D. 8vo. 308 pages.

The above three publications contain the usual selections and abstracts of papers on medical and surgical subjects, published during the preceding six months.

The Illustrated Annual of Phrenology and Physiognomy for 1872. By S. R. Wells, editor of the Phrenological Journal and Life Illustrated. New York. 12mo., 72 p. Price 25 cents.

It contains short essays written in a popular style, on subjects indicated by its title.

Fireside Science. A series of popular scientific essays upon subjects connected with every-day life. By James R. Nichols, A. M., M. D. New York: published by Hurd & Houghton. 1872. 283 pages.

This handsome volume contains twenty-three essays, most of which have appeared in the columns of the "Boston Journal of Chemistry," but have been revised and partly re-written before publishing them in their present garb. The aim of the author, to present some of the facts of science in their bearing upon hygiene, the arts, agriculture, &c., in a way to interest and instruct those who gather by the fireside, and those who labor in the workshop and the field, has been successfully carried out, abstract reasonings and technicalities being carefully avoided, while on the other hand the statements are presented in a brief, natural and lucid manner, which is sure to interest the intelligent reader. Occasionally the descriptions are very graphic; the paper, "Among the Coal Miners," for instance, cannot fail to be specially appreciated by those who have passed up the picturesque valley of the Lehigh to enter into the valley of the Susquehannah below Wilkesbarre, although it can scarcely do justice to the beauties presented at every step, notwithstanding the scenery is depicted with evident delight.

An intelligent reader is sure to derive useful instructions and sound views upon many subjects from a perusal of this volume, even if he does not believe in the kind of vitalizing capability which the author thinks is inherent to the excrementitious salts found in the manure heap.

Announcement of the Spring Course of the Rush Medical College, Chicago.

The building of this College was destroyed by the great fire last fall; the Faculty have secured the lecture and clinic rooms of the Cook county hospital, corner 18th and Arnold Sts., to commence on March 6th, the usual Spring Course, which will continue sixteen weeks.

OBITUARY.

Joseph Arnold, a student of the Philadelphia College of Pharmacy, died in this city, Feb. 14th, having nearly completed his 21st year. The deceased was a son of Dr. Arnold, of Hazleton, Pa., in whose office he first acquired a love for pharmacy. In 1868 he came to this city and engaged with Mr. C. E. Haenchen to learn the business. Early in February he was taken sick with a disease of the spine, which attack proved fatal. While attending his first course during the past session, he was an attentive student and well liked by the members of his class.

Joseph M. Hindmeyer, a student of the Philadelphia College of Pharmacy, we are informed, died of typhoid fever, on Sunday, the 18th inst.

Charles Shoemaker, a graduate of the Philadelphia College of Pharmacy, Class 1866, was drowned near Wilmington, Del., on February 1st. The following communication, regarding his death, has reached us:

The Executive Board of the Alumni Association, have heard with regret the death of Mr. Chas. Shoemaker, of the class of 1866, which took place on the afternoon of Feb. 1st, while skating on the Christiana Creek.

Mr. Shoemaker was a native of Germantown, Pa., a son of Benjamin Shoemaker, a teacher for many years in that place. He was regularly educated in the drug and apothecary business, and graduated in 1866; he removed to Wilmington, Del., a few years since, and had established a thriving business; his urbanity and ability had secured him many friends among those whose intercourse he enjoyed, and his sudden death, at the age of 25 years, has saddened those who had met him either on business or in social life. His death, however, did not find him unprepared, for he had the well grounded hope of a blissful immortality.

Thos. S. Wiegand, R. M. Shoemaker, E. D. Paxson, *Committee.*

Mr. Lecanu, Professor at the École de Pharmacie and member of the Board of Health of Paris, France, died in that city in December last.